SEPTEMBER 7, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

A Job for Management: Better Labor Relations

No. 7 of a Management Series

A PROGRAM FOR MANAGEMENT

In the next 16 months industry has a golden opportunity to win greater allegiance from its employees and to recapture the initiative in industrial relations — p. 101

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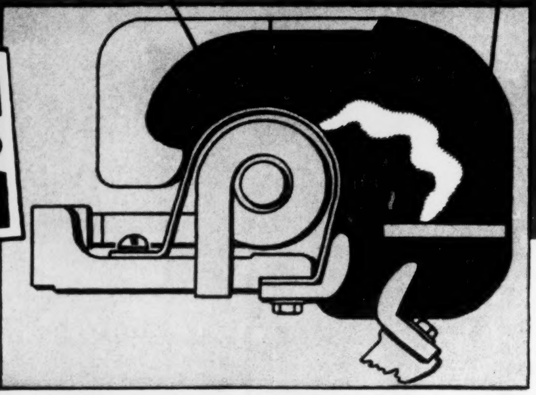
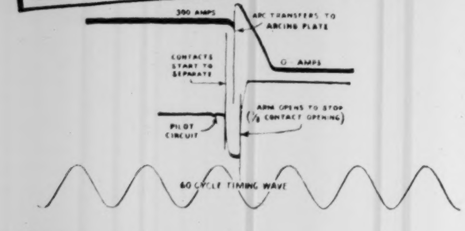
Quick Arc Transfer

[illegible] guard [illegible]

WITH EC&M
LINE-ARC
(TRADE MARK REG.)
CONTACTORS
N. P. 168




300 AMPS
ARC TRANSFERS TO ARCING PLATE
CONTACTS START TO SEPARATE
0 AMPS
ARM OPENS TO STOP (⅛ CONTACT OPENING)
PILOT CIRCUIT
60 CYCLE TIMING WAVE

As the contacts start to separate, the arc is removed in 1/500th second. The oscillogram at the left shows this clearly.

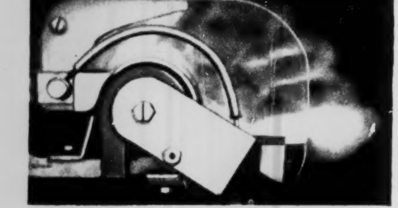
Standard single-pole LINE-ARC Contactor.

Keeps Contacts COOL for LONG Life

In EC&M LINE-ARC Contactors, the arc leaves the contacts quickly . . . and keeps moving in a line, centered between but not touching the arc shields. One end of the arc travels along the arcing-plate and the other end along the circular guard over the blowout coil.

In repetitive operation, the copper contacts remain cool. This low operating temperature keeps the copper hard and greatly extends the life of the tips.

EC&M LINE-ARC Contactors have a reputation for high performance. Ask our nearby office to explain the advantages of these popular contactor controllers for cranes, mill drives and material handling machines



100-ampere contactor with special glass arc shields ruptures 300-ampere load. This convincing demonstration has been witnessed by hundreds of visitors at the EC&M Factory.

No Destructive Arc Shield Burning

An a-c bucket crane has handled over one million tons of fertilizer with minimum upkeep on EC&M LINE-ARC Contactor Control. In seven years, three arc shields were accidentally broken, but none have been replaced due to burning. Contacts on one size contactor have been replaced on an average of once a year, the next size every two to three years, and no replacements on the largest size. It pays to specify EC&M Control.

SEND FOR BULLETIN 1145

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

HIGH-STRENGTH BOLTS

Save Erection Time

Erection of steelwork can be accomplished in less time when you use Bethlehem High-Strength Bolts to join the structural members.

Used in place of field-driven rivets, Bethlehem High-Strength Bolts are installed by a crew of only two men. One man operates an impact wrench, the other a holding wrench. No other tools are needed.

In installing these high-strength bolts, two hardened washers are placed on each bolt, one washer going under the head, the other under the hexagonal nut. This makes possible the development of maximum clamping force, without deforming the connected material.

Where the bolts pass through beam- or channel-flanges having a sloping inner face, a bevel washer provides a square seat for the bolt head or nut. The bevel washer is made in two types, for use with wide-flange beams and with standard beams or channels.

Bethlehem High-Strength Bolts are made at our fasteners plant at Lebanon, Pa. They are heat-treated by quenching and tempering, to meet the requirements of ASTM Specification A-325.

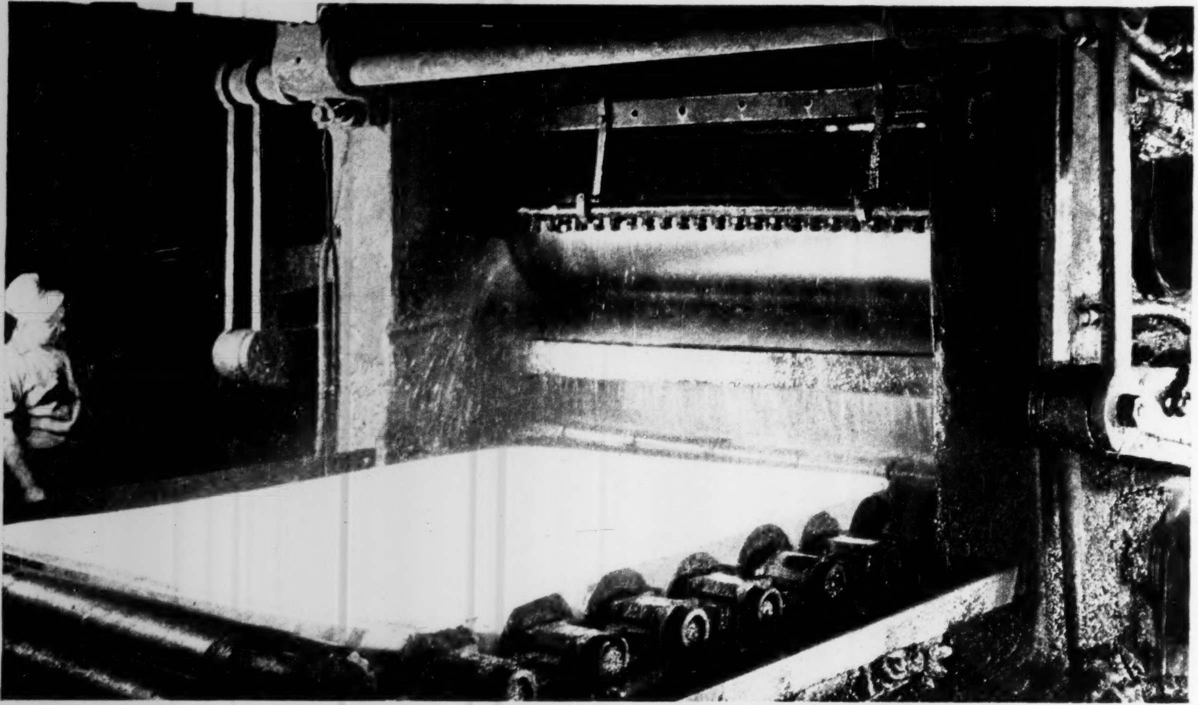
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

New Booklet on Bolted Construction

We've just issued a 16-page booklet, "High-Strength Bolting for Structural Joints," giving detailed technical information about the advantages of high-strength bolts in erecting steelwork. Two colors, illustrated. If you would like to have a copy, write to Publications Dept., Room 1039, Bethlehem Steel Company, Bethlehem, Pa.



HOT PLATE SPECIAL rushing from an 89" rolling mill at Barium's Central Iron & Steel Company, Harrisburg, Pa.

Here comes next year's luxury liner

Or a giant oil storage tank *or* a freight car *or* a bridge for a super highway.

Wherever it goes, however, high-quality steel plate from Barium's 100-year-old Central Iron & Steel Company rates a warm welcome. And it goes nearly everywhere in basic industry—petroleum, transportation, shipping and construction.

Plate steel is only one of a long list of Barium steel products. In fact, few other steel companies make so many different things.

And when you deal with Barium, you draw on a 16-company reservoir of engineering knowledge and production experience hard to match even in much larger companies.

Maybe that's why so many essential products you see today—from tiny instrument springs to 20,000-barrel tanker barges—wear Barium nameplates. We'll be glad to tell you what's behind this name. Write Barium Steel Corporation, 25 Broad St., New York 4, New York.

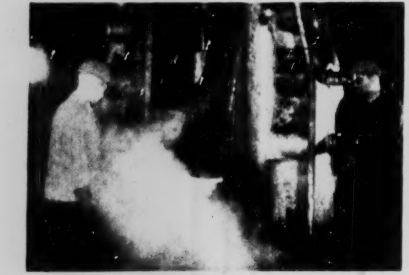
BARIUM STEEL CORPORATION

Sixteen integrated companies working in

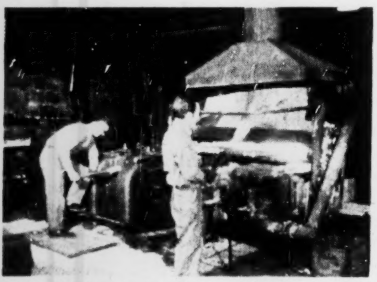
STEEL · MAGNESIUM · ALUMINUM · FIBERGLAS

BAYONNE BOLT CORP · CENTRAL IRON AND STEEL COMPANY · CHESTER BLAST FURNACE, INC · CLYDE IRON WORKS, INC · CUYAHOGA SPRING COMPANY · EAST COAST AERONAUTICS, INC · ERIE BOLT AND NUT COMPANY · GEOMETRIC STAMPING CO · GLOBE FORGE INCORPORATED · INDUSTRIAL FORGE & STEEL, INC · JACOBS AIRCRAFT ENGINE CO · KERMATH MANUFACTURING CO · KERMATH LIMITED (CANADA) · PHOENIX BRIDGE CO · PHOENIX IRON & STEEL CO WILEY MANUFACTURING CO

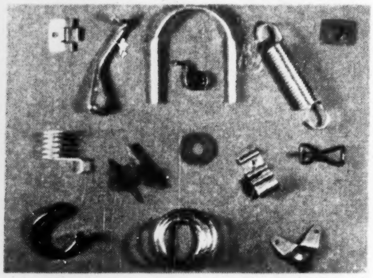
3.3



HAMMERING HOME its point is this drop forge at Barium's Globe Forge, Inc., Syracuse, N. Y. Globe forges a wide range of products, from automotive gear blanks to rocket components and tank parts, specializes in intricate customer-specified jobs.



BIG BOLTS are these 2 in. diameter steel heavyweights being forged on an Acme machine at Barium's Bayonne Bolt Corp., Bayonne, N. J. Bayonne makes standard and special fasteners from 1/4 in. to 4 in. in diameter.



GROUP PORTRAIT showing a few of the almost endless variety of extension, compression and torsion springs, wire forms and flat springs made by Barium's Cuyahoga Spring Co., Cleveland, O. At middle right is famous Snap-Clip.

Why "breathing space" between each wire?

- To provide maximum flexibility—tiny, precise amounts of "breathing space" are engineered between each of these wires.
- There are 295 wires in this particular construction . . . 9 different sizes of wire.
- All wires are drawn in Macwhyte's plant to assure uniform quality.
- Heavy, tenacious lubricants fill the spaces between wires. This *Internal Lubrication* guards against corrosion and friction, and also increases flexibility.
- Macwhyte's PREforming process forms the wires and strands into a spiral so they lie naturally in place with a minimum of internal stress.
- From a thousand and one wire ropes, Macwhyte engineers are ready to recommend the right rope for your particular needs. For best, lowest cost wire rope service, write today for recommendations of the best constructions of rope to use on all your equipment.

This Macwhyte Rope is 6 x 41 Filler Wire PREformed Lang Lay Monarch Whyte Strand with IWRC, just one of the thousand and one wire ropes made by Macwhyte.

MACWHYTE WIRE ROPE

THE RIGHT ROPE
FOR YOUR EQUIPMENT

Ask for G-15 Wire Rope Handbook

MACWHYTE
COMPANY
KENOSHA, WIS.

Macwhyte Company, *2912 Fourteenth Avenue, Kenosha, Wis. Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope and Wire Rope Assemblies. Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.*

1-44

WITH HOSE, TOO

It pays to order from your Goodyear Distributor

STANDARD HOSE REPLACES SPECIAL CONSTRUCTION

This company had been using specially-built, heavy, plied-up type hose requiring special construction at a high price. The Goodyear Distributor called in the G.T.M.—Goodyear Technical Man—found standard ORTAC hose with oil-resistant cover could do the job at a fraction of the cost.

PREMATURE HOSE FAILURE ENDED

A sand and gravel company was troubled with premature failure of water and sand discharge hose, caused by slight suction set up when pumps were started. The Goodyear Distributor and the G.T.M. recommended DIVERSIPIPE—which has served over two years and is still going strong.

Here's why it pays to order from your local Goodyear industrial rubber products distributor.

Replacement orders filled when you need them from convenient, local stocks.

One order, *one* bill, *one* central responsibility for all your Industrial Products requirements.

You save on valuable stockroom space, because your local distributor maintains a full stock of the items he knows you need.

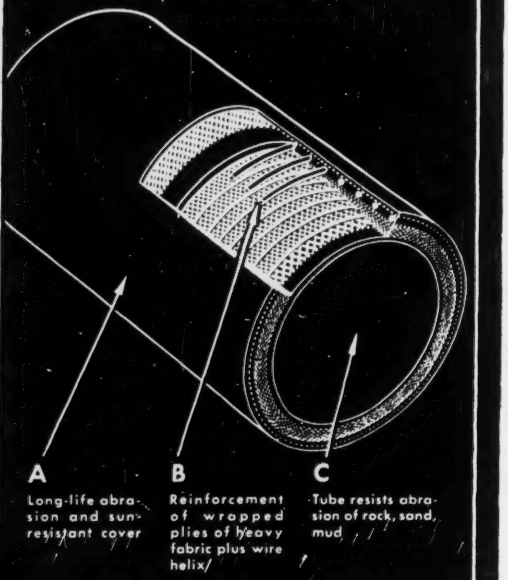
Double assurance of satisfaction because the distributor and Goodyear stand behind the products he sells you.

Goodyear, Industrial Products Div.,
Akron 16, Ohio

GOODYEAR INDUSTRIAL PRODUCTS

GTM -Specified DIVERSIPIPE

for Sand and Water Discharge Service


A
Long-life abrasion and sun-resistant cover
B
Reinforcement of wrapped plies of heavy fabric plus wire helix
C
Tube resists abrasion of rock, sand, mud

We think you'll like
THE GOODYEAR TELEVISION PLAYHOUSE
every other Sunday—NBC TV Network

Ortac—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

THE GREATEST NAME IN RUBBER

This Week in Metalworking

STEEL

Vol. 133 No. 10 September 7, 1953

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Over 4000 Standard

PE ALUMINUM EXTRUSIONS

AVAILABLE WITHOUT DIE SERVICE CHARGE

or Special Designs to fit your needs

Precision Extrusions catalogs over 4000 standard sizes and shapes of extruded aluminum rods, bars, shapes, and tubing, serving a wide variety of applications in transportation, architecture, and general industry. Or, if your product requirements call for a specially-designed extrusion, PE engineers will work with you in answering your problems of design, alloy-selection, and production.

PE **PERSONALIZED SERVICE** and specialization in aluminum extruding assures you of prompt handling of your inquiry, careful production supervision, and extrusion quality meeting the highest standards of the industry.

PE **COMPLETE FACILITIES** include design engineering, die making, billet casting, extrusion production, and standard finishing operations.

PE **ENGINEERING ASSISTANCE** is available without obligation. If your present or future plans call for quality aluminum extrusions in standard or special shapes, call on PE, or write, on your company letterhead, for our new complete catalog.

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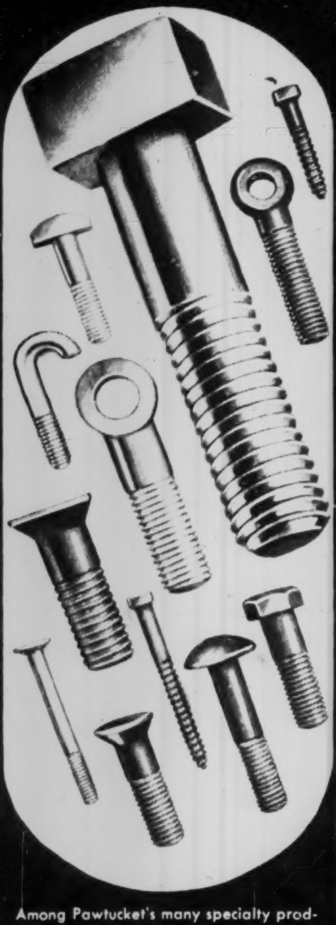
PRECISIO TRUSIONS

BENSENVILLE, ILLINOIS

CHICAGO: TUxedo 9-1701 • BENSENVILLE 98

THREADED SPECIALTIES
TEE BOLTS
by an exclusive method



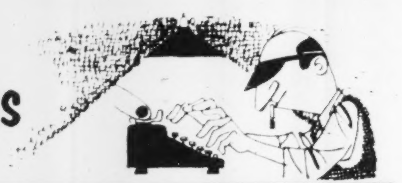
Among Pawtucket's many specialty products, these lower-cost tee-head bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket tee-head bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

BETTER BOLTS SINCE 1882

PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street · Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

behind the scenes



A Real Gone Guy Is Found

We were one of many in the Penton Theater last Friday when E. C. Clarke, vice president, Chambersburg Engineering Corp. was on hand to show a film entitled "Forging in Mid Air." Aside from the fact that this was one of the most professionally done product films we have ever had the pleasure of seeing, we were treated to a very pleasant few minutes in Mr. Clarke's company.

He's a master story teller, this fellow, and among the yarns we found most interesting was the one in which he described the trials of their film producer in finding a typical, old-fashioned, hammer-and-anvil blacksmith for the opening shots of the film.

It seems that miles and miles of Pennsylvania countryside were traveled in this Don Quixote quest but with no success. Finally, when it appeared that this producer fellow was going to burst his bellows, they talked him into going to the circus at Madison Square Garden as sort of a relaxing, safety-valve measure.

No sooner had the grand parade into the saw dust circle started when our hero had an inspiration. "All these horses" he asked himself, "and no blacksmith?" There must be a village smithy somewhere. So out of his seat he goes, nose pointed blacksmith-ward. Sure enough, after 20 minutes of the Sam Spade routine, he found himself a real live smith, bellows, coals, anvil and tongs, in the sub-sub-subbasement of Madison Square Garden in the heart of New York City.

So, with apologies to Henry Wadsworth Longfellow, may we parody as follows:

Don't look under the chestnut
tree;
The village smith ain't there.
He's beating his brains out on
circus nags
Under Madison Square.

Dog-goned Business

Granite City, Ill., becomes Shrdlu's city of the week as two stalwarts from the middle west, one male and one female, came through with the correct answer to the "Doggie on the Prowl" puzzle of August 24.

H. Elmer Short, works auditor of Granite City Steel Co., and (Miss) Charlsie Burch, in the works manager's office at General Steel Castings Corp. (largest producers of one-piece steel castings in the world, Miss Burch tells us) were the winners. We like, particularly, hearing from Miss Burch. Gives a little *class* to our column.

Close behind were Harry Wilson of Automatic Signal Division, East Norwalk, Conn.; P. A. Schkeeper of New Jersey Meter Co., Plainfield, N. J.; H. R. Boyer of Union Fork & Hoe Co., Columbus, O., and L. D. (Ole Faithful) Rice of Timken Roller Bearing Co., Canton, O.

We like Mr. Short's letter:

> Dear Shrdlu:
>
> Re: "How far did the little dog go?" As I figure it out, the first man with his eight mile head start, had accounted for 24 miles in the first four hours, and the second man at his constant gait of six miles per hour, had finally caught up with him.
>
> Thus, there is a four hour time limit, and as the dog was running evenly at fifteen miles per hour, it follows, as night must follow day, said little dog traveled 60 miles in all, assuming, of course, there were no diverting influences such as poles, trees, etc.
>
> H. Elmer Short

You are absolutely correct, Mr. Short. Neither plug, nor pole, tree nor hound could deter this dog who was man-to-man bound.

Now, Try This One . . .

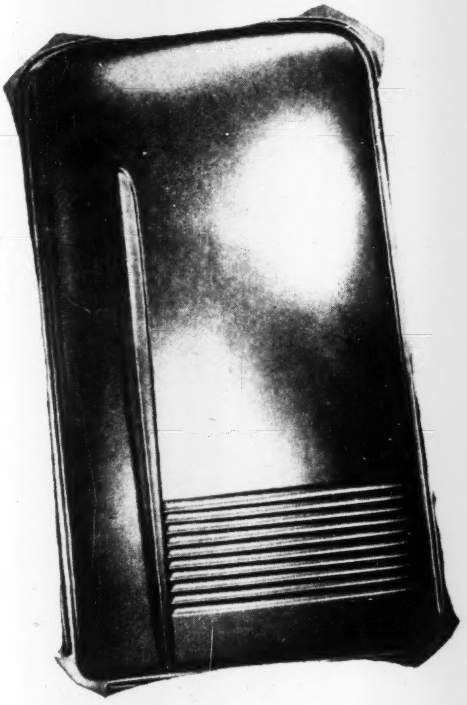
The water lentil reproduces by dividing into two parts every day. Thus, on the first day we have one, on the second two, on the third four, on the fourth 8, and so on.

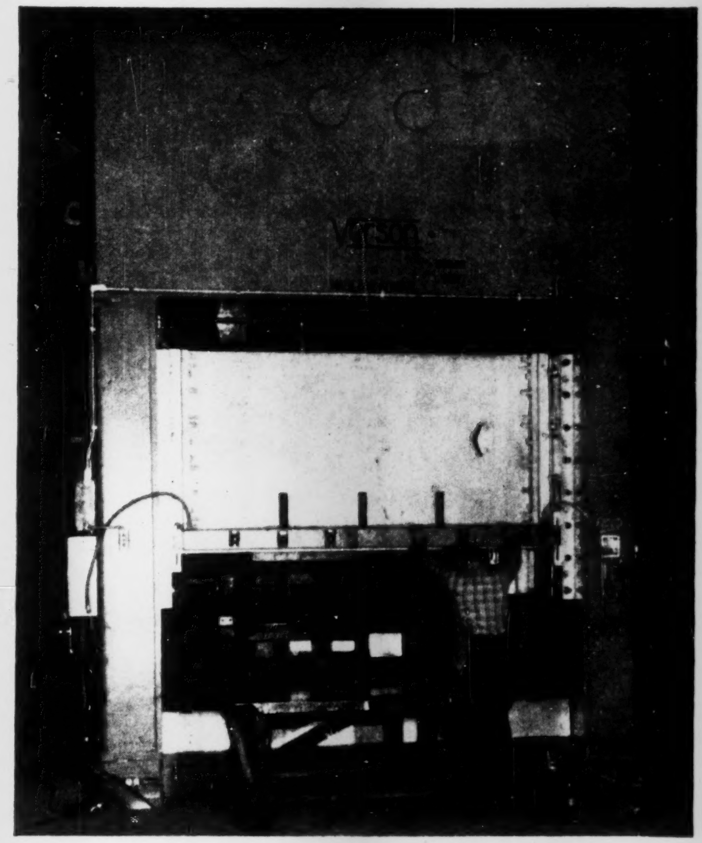
If, starting with one lentil, it takes 30 days to cover a certain area, how long will it take to cover the same area if we start with two lentils.

Shrdlu

(Metalworking Outlook—Page 53)

MADE FOR ADMIRAL





THIS **Verson** FULL ECCENTRIC PRESS

produces refrigerator doors

AT Admiral Corporation's Midwest Manufacturing Division in Galesburg, Illinois, all heavy press and press brake equipment is of Verson manufacture, especially for Admiral. The press illustrated above is typical—a 600-ton Verson full eccentric with two points of power application to produce large pieces such as the refrigerator door shown. Other full eccentrics in the Verson line-up at Admiral range from 200 tons to 600 tons capacity.

For all types of forming of large or small pieces for ranges, refrigerators, freezers, space heaters or what have you, Verson full eccentrics provide the five essentials of press design—strength, rigidity, endurance, accuracy and power. For the user of our presses, it means better stampings at lower overall cost.

Whatever you produce that requires stampings —it will pay you to find out what we can offer you. For recommendations, send an outline of your requirements.

A Verson Press for every job from 60 tons up.

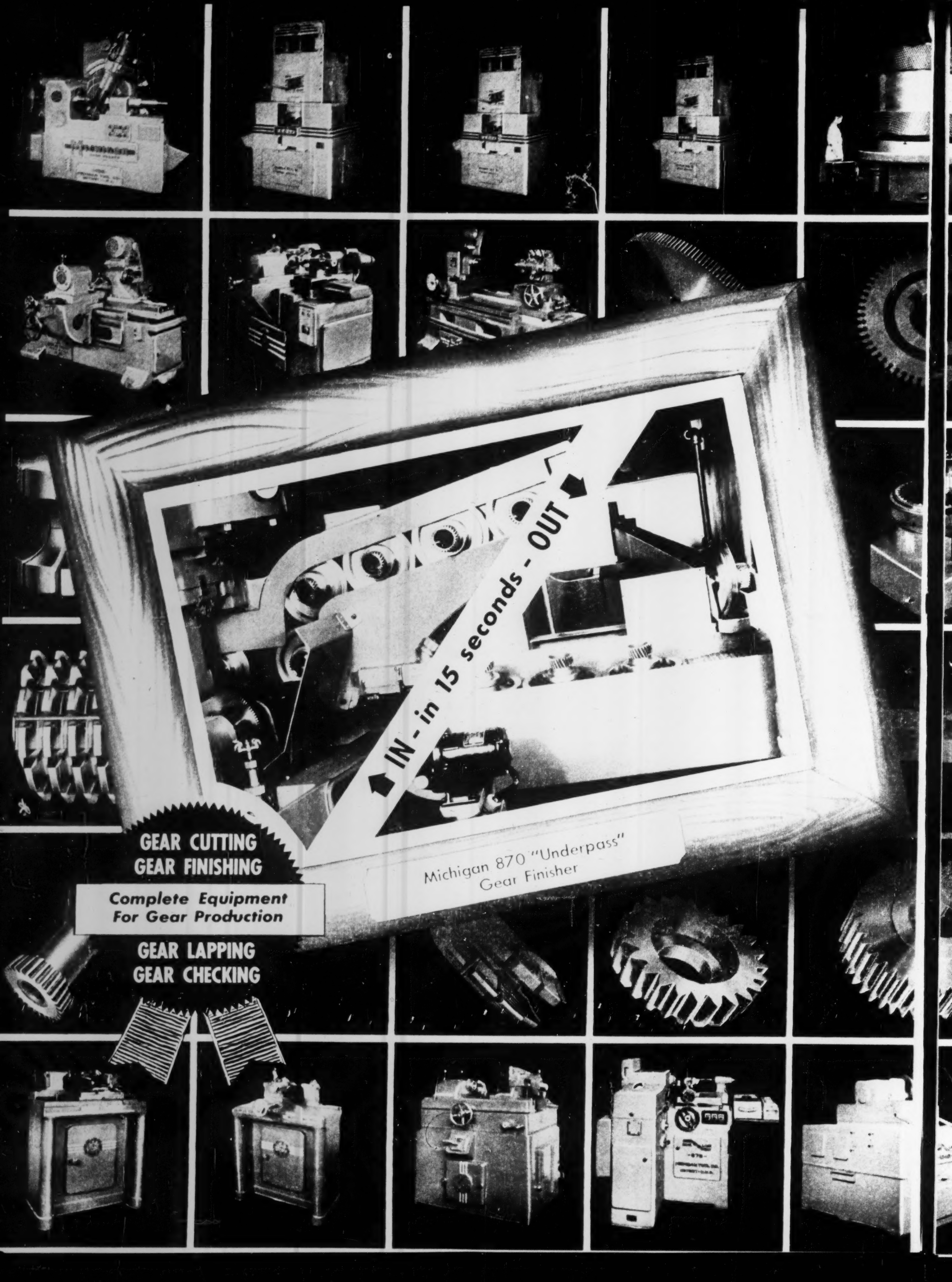
TRADE **Verson** MARK

ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

VERSON ALLSTEEL PRESS CO.

9318 S. KENWOOD AVENUE, CHICAGO 19, ILLINOIS • SO. LAMAR AT LEDBETTER DRIVE, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • VERSON WHEELON HYDRAULIC PRESSES



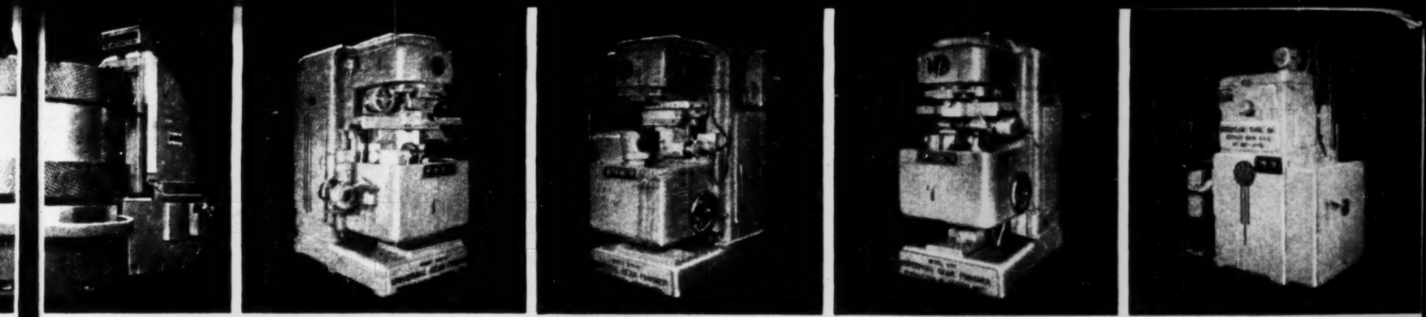
IN - in 15 seconds - OUT

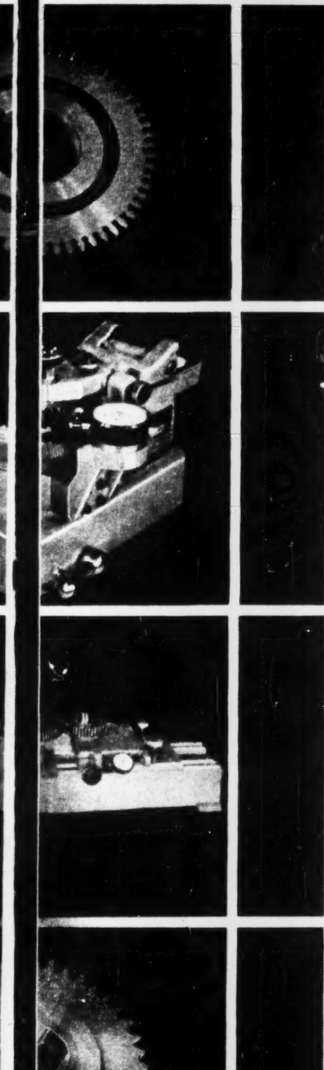
Michigan 870 "Underpass"
Gear Finisher

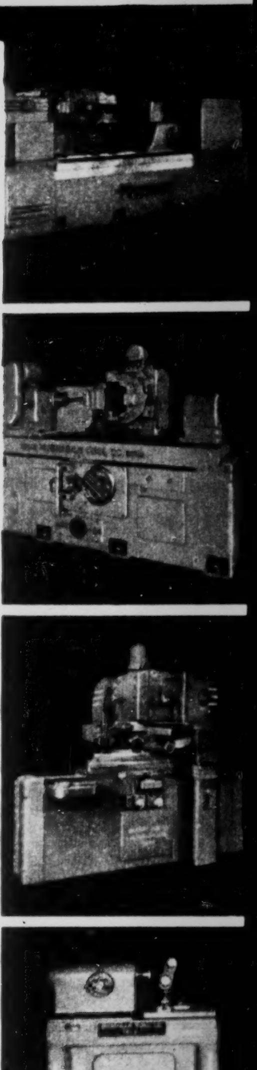
GEAR CUTTING
GEAR FINISHING

Complete Equipment
For Gear Production

GEAR LAPPING
GEAR CHECKING







AUTOMATIC SETUP SHAVES

4 GEARS per minute

This *standard** Michigan 870 "Underpass" gear finisher *with automation* shaves 240 shoulder gears per hour. The 27-tooth helical gears are 2.0257" pitch diameter with 0.734" face width. The shoulder flange is 6.250" O.D.

Completely automatic operation keeps production in high gear. The operator only loads the hopper. Even pre-inspection is automatic: *A sizing fixture at the hopper mouth rejects oversize gears.*

From the hopper an air cylinder feeds parts into shaving position, one at a time. An air operated expanding mandrel clamps the gear, holds it during "Underpass" shaving (the fastest precision shaving method known), and automatically releases the gear at the end of the machine cycle.

Ejection, too, is automatic. The flange of the incoming gear pushes against the flange of the shaved gear and rolls it down a trough where it gently lays over, flange down, on a wire mesh conveyor used to transfer the gear to the next operation.

**Should the automation equipped machine be needed for shaving other gears, it may be converted to a standard operation by removing the automatic loading mechanism and controls.*

GEAR PRODUCTION HEADQUARTERS

Michigan Tool Company

COMPLETE from blank to finished gear EQUIPMENT

7171 E. McNICHOLS RD. • DETROIT 12, MICHIGAN, U. S. A.

43%* of all businesses shut down by fire are now as extinct as dinosaurs. Records burned, orders destroyed, customers lost. Better protect your business with a KIDDE fully AUTOMATIC CO₂ Fire Extinguishing System.

*according to a survey by the Safe Manufacturers' National Association

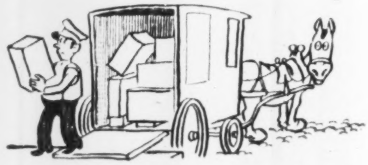
The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc. and its associated companies

Kidde

Walter Kidde & Company, Inc.,
960 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

Matter of Distribution



We are working with Ohio State University on a continuing series of lectures having to do with wholesale management. In this connection we would like to use reprints of your article on distribution in our student notebooks.

With that in mind, will you kindly quote us on reprints in quantities of 100, 250 and 500.

In any event, we would like to call this article to the attention of our board of directors and for that would like to order a minimum of 50 reprints at once.

Paul H. Bolton
executive vice president
National Association of Wholesalers
Washington

• *Sixty reprints are on the way. Quotations for quantity reprints requested have been sent by our Reprint Department.—ED.*

Thank You!

The chairman of the Federal Trade Commission felt your comments on the the Commission in your excellent article on distribution were both accurate and interesting.

Fitzhugh Green
executive assistant for
public affairs
Federal Trade Commission
Washington

Your article on distribution (STEEL's "No. 6 of a Management Series", Aug. 3, p. 57) seemed to me a far more penetrating analysis of the subject than the usual magazine article.

T. V. Houser
vice chairman of the board
Sears, Roebuck & Co.
Chicago

Let's Hope the Trend Grows

May I have 20 copies of your "No. 6 of a Management Series" entitled "Distribution" which appeared in STEEL, Aug. 3, 1953.

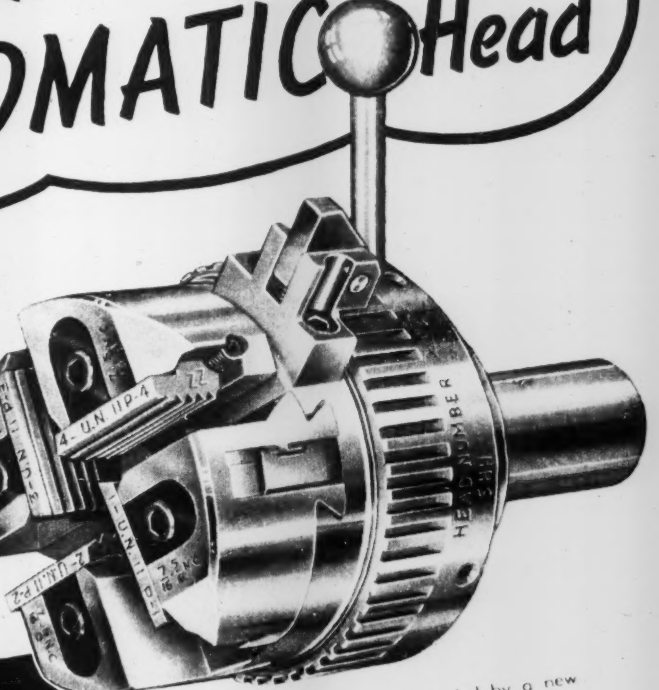
It is certainly refreshing to see that, at long last, some recognition of distribution is becoming apparent in the thinking of both business and industry. We, of course, have known for years that mass production is just a by-product of mass distribution, but some of the thinking which was prevalent in Washington during the war was certainly hard to take.

M. I. Stray
Charles A. Templeton Inc.
Waterbury, Conn.

• *Your 20 copies have been mailed. Many thanks for your interest and comments.—ED.*

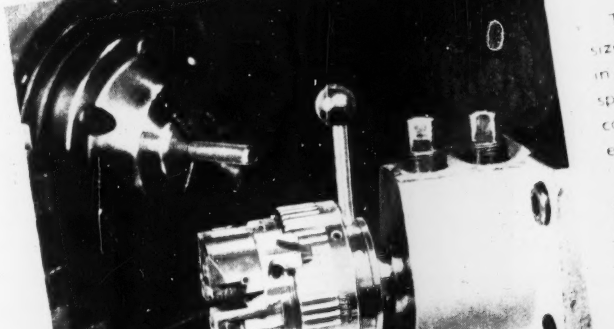
Please turn to page 12

The IMPROVED 5/8" LANDMATIC Head



- *POSITIVE LOCKING ACTION*
- *MORE RIGID CONSTRUCTION*

An improved **LANDMATIC** Hardened and Ground threading head has been designed for use on turret lathes, hand-operated screw machines, and automatic screw machines employing a stationary head. The 5HH **LANDMATIC** is a stationary self-opening head, and will produce threads ranging from 1/4" to 5/8" in diameter. Its construction features two important improvements in design—a positive locking action, and greater head strength.



The positive locking action is provided by a new size-adjustment mechanism. A pivoted latch is held in engagement with notches on the adjustment ring by spring tension. A movement of one notch makes a corresponding adjustment of .001" on the pitch diameter of the workpiece.

The greater overall strength of this die head results from the increased thickness of the head body and its various parts. The new design allows this small die head to easily withstand the extreme stresses imposed when threading special alloy steels.

The 5HH **LANDMATIC** Head has a notably small number of working parts. All parts are made of special alloy steel, and are hardened and precision ground. Left-hand threads may be cut by using left-hand chaser holders and regrinding the same set of chasers. More information available on request.

50th ANNIVERSARY

The LANDIS *Machine* COMPANY

THE WORLD'S LARGEST MANUFACTURERS OF THREAD GENERATING EQUIPMENT

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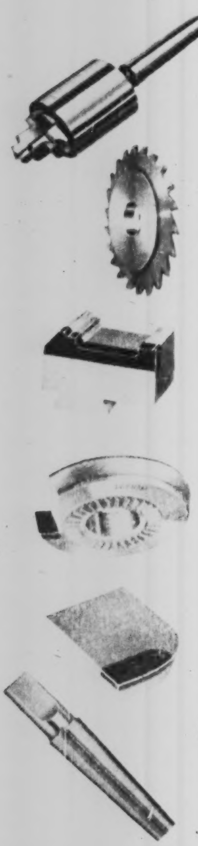
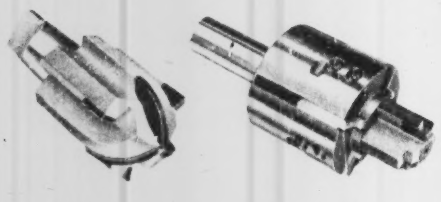


When your production machining problem dictates the use of special carbide tooling, your nearby Gorham Field Engineer can give you the right answers fast! He's an expert in the design and application of special cutting tools . . . and he provides a complete engineering service to determine your exact requirements.

He begins with your product, sketch or idea. He surveys your production operations and available equipment. He considers work material properties and required finishes and tolerances. He plots speeds, feeds and methods of tool driving. Then he develops practical design and metallurgical specifications for a special tool that's "tailor-made" for your application. And his recommendations are backed by Gorham's more than thirty years' experience in the design, manufacture and heat treatment of fine cutting tools.

Yes, your nearby Gorham Field Engineer is a helpful man to have around! If you haven't yet met him, write for his name, or send details of your problem direct, and we'll have him get in touch with you promptly.



Gorham TOOL COMPANY
"EVERYTHING IN STANDARD AND SPECIAL CUTTING TOOLS"
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WEST COAST WAREHOUSE: 576 North Prairie Ave., Hawthorne, Calif.

LETTERS

Concluded from page 10

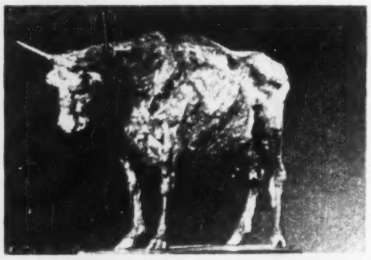
Who Hot-Dips Parts?

I read with keen interest your recent articles on "Coating Steel with Aluminum" (STEEL, Aug. 3 & 10 issues). I wonder if you could give me names of firms who commercially hot-dip fabricated parts.

Joe S. Turner
materials engineer
The Coleman Co. Inc.
Wichita, Kans.

• *Many thanks for your interest. Unfortunately, we do not have the names of firms doing the work, but we believe that you may obtain such information by writing Dr. Kent R. Van Horn, Research Laboratories, Aluminum Co. of America, New Kensington, Pa.—ED.*

And It's No Bull Either!



Re: STEEL magazine, Aug. 17, 1953, p. 104: If the object shown and captioned as a water buffalo is such, many cow hands in the state of Texas have been punchin' the wrong critter for years

J. H. Eastham
635 Peninsula
Dallas, Tex.

• *The artist thought it was a water buffalo—at least that's what the photographer's caption said. And there wasn't a water buffalo in the neighborhood we could ask. We are properly cowed.—ED.*

Interest in the Challenge

Please mail ten reprints of the article entitled "Open Hearth Challenged As . . . More Carbon Steel Goes Electric" by Dr. Allen G. Gray which appeared in the Aug. 24 issue.

C. W. Holmquist
executive vice president
Copperweld Steel Co.
Warren, O.

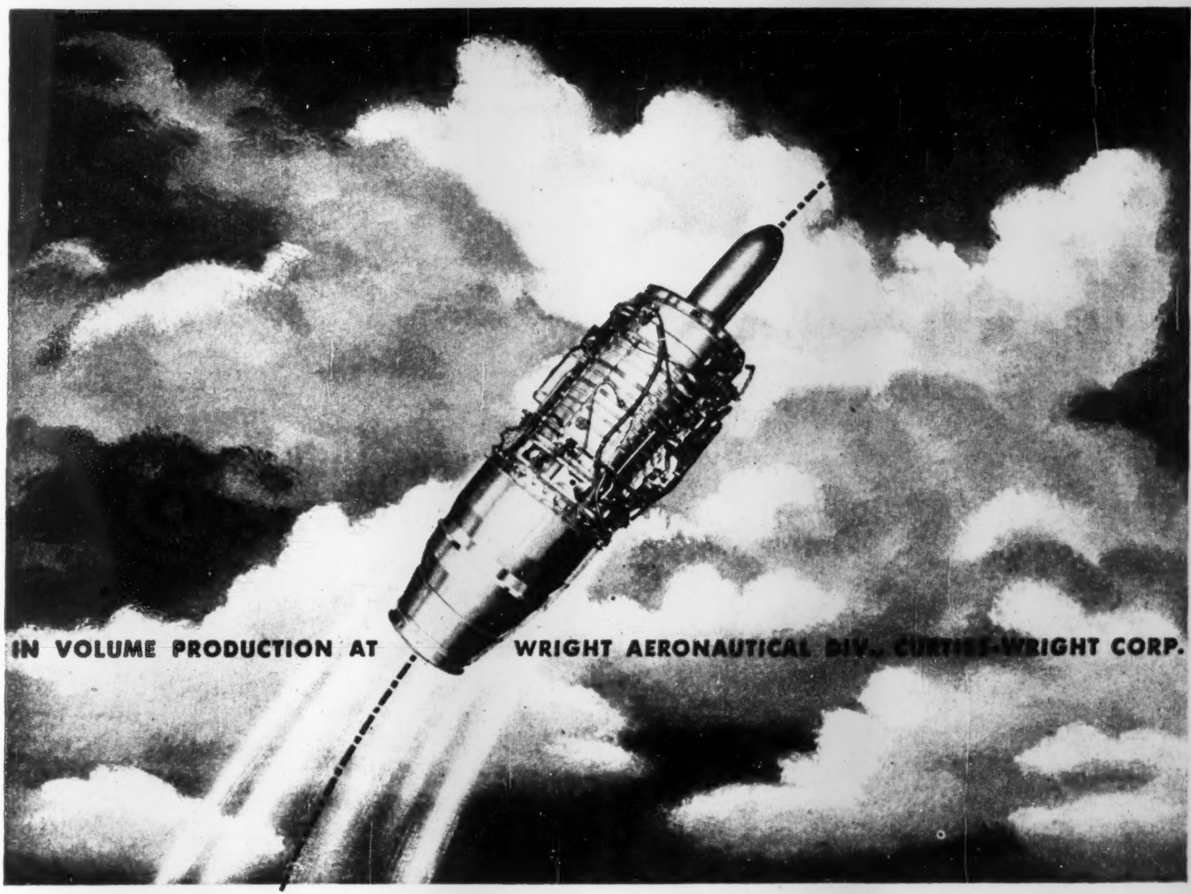
• *Reprints are being sent.—ED.*

Nickel Under Chromium

In STEEL, Aug. 10, p. 95, you mention a coating called Nickelex which is being used as a substitute for nickel under chromium. We would appreciate your giving us the name of the firm developing this process or any further information you have.

D. T. Dixon
comptroller & assistant general manager
George W. Prentiss & Co.
Holyoke, Mass.

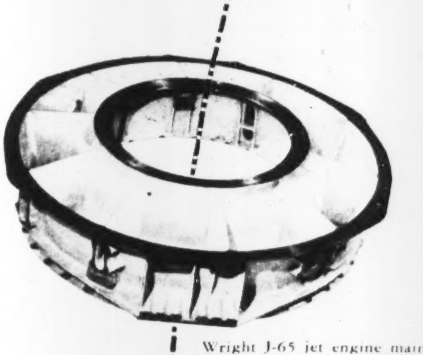
• *We suggest that you write to Dr. F. A. Lowenheim, Metal & Thermit Corp., Rahway, N. J., for more information on Nickelex.—ED.*


IN VOLUME PRODUCTION AT
WRIGHT AERONAUTICAL DIV., CURTISS-WRIGHT CORP.

Ductalloy® castings make "impossible" parts producible

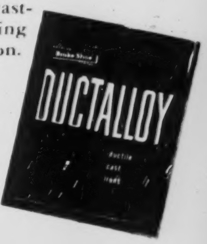
This highly stressed part secures the 7,200-lb. thrust Wright J-65 jet engine in the aircraft, carries major structural members ahead of and behind it, and mounts a main shaft bearing in its center. Air roars between the carefully contoured inner and outer rings.

As originally hogged out from an aluminum forging on an experimental basis, this part required some 1200 hours of machining—impractical for volume production. Redesigned by Curtiss-Wright Corporation's Wright Aeronautical Division as a weldment of two Ductalloy precision castings, it requires only simple turning and facing plus 25 ft. of welding to assemble the ten interconnecting stainless steel struts. An "impossible" part for volume manufacture in other metals which would meet specifications, it is rendered readily producible in Ductalloy—Brake Shoe's ductile cast iron that combines high strength with the casting and machining qualities of gray iron.



Wright J-65 jet engine main bearing support . . . impractical to machine from one piece. Readily produced as a weldment of two Ductalloy precision castings.

YOUR PROBLEM—Ductalloy may solve your problem if it involves economical production of complex metal shapes that are difficult to cast in steel, expensive to forge, or lacking strength in gray iron. Brake Shoe's experience, research laboratory and experimental foundry are available to help you best utilize its unusual combination of characteristics. Write for your copy of this new technical bulletin today.



Ductalloy® castings are made by: BRAKE SHOE & CASTINGS DIVISION
ENGINEERED CASTINGS DIVISION

Brake Shoe

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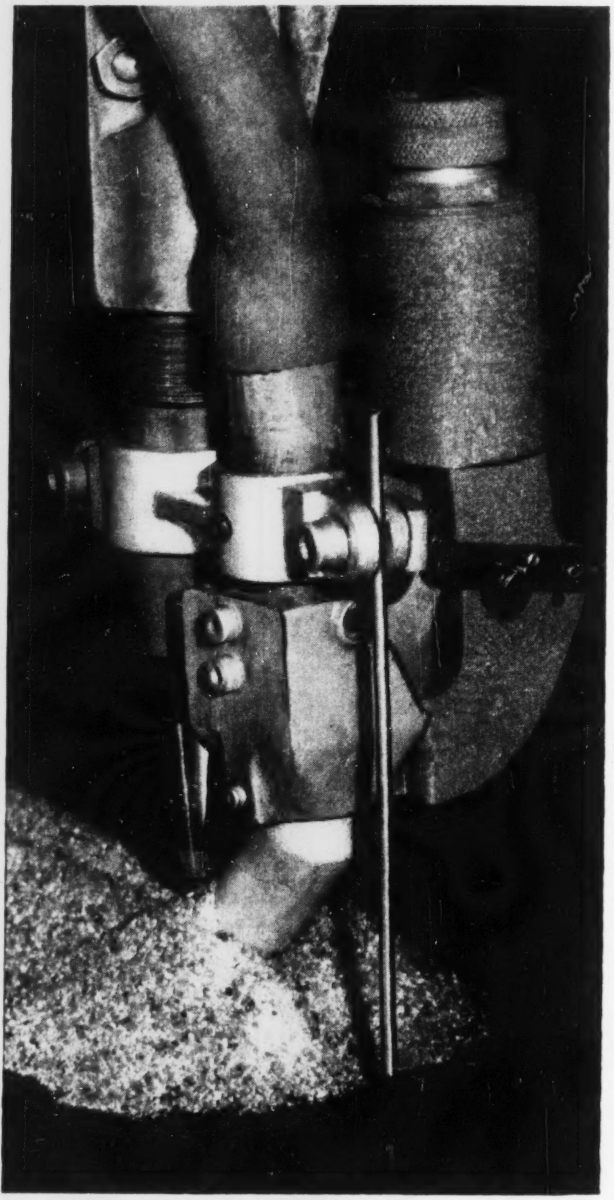
LINDE'S Service Engineers will gladly help you design a UNIONMELT installation to meet your exact requirements. They will also be available to help you when a tough production problem comes up. Call your nearest LINDE representative today.



LINDE AIR PRODUCTS COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
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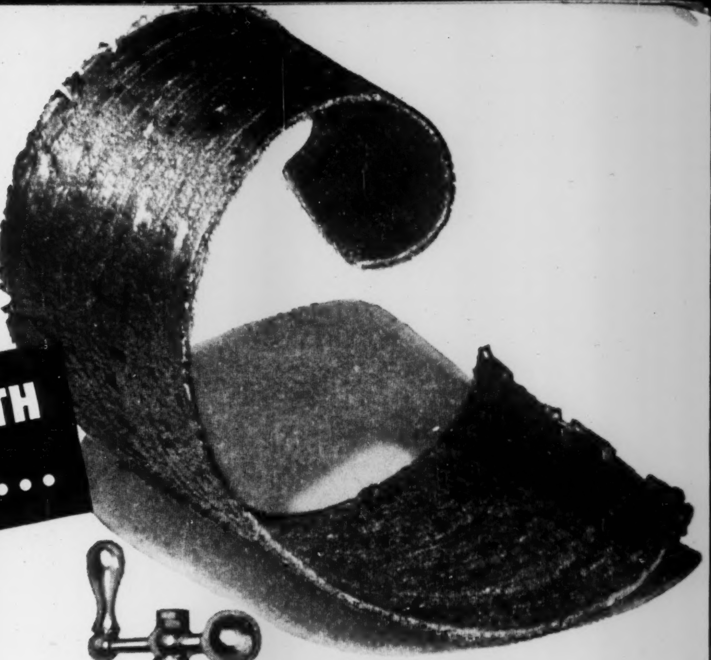
50 lbs. oil pressure

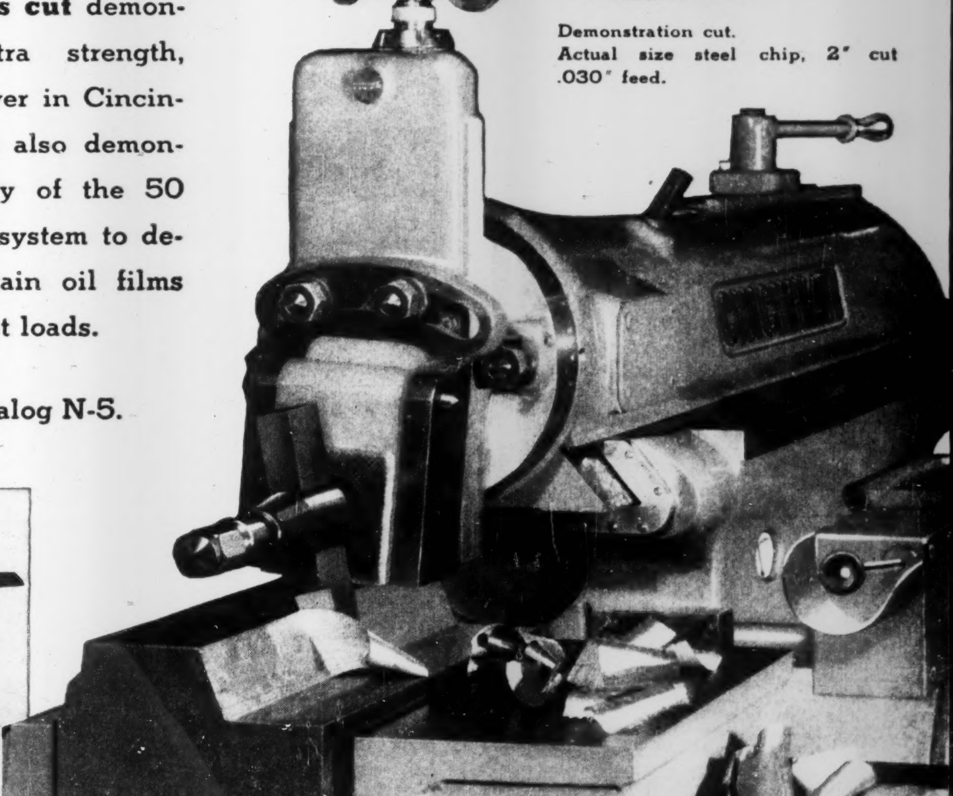
IS NECESSARY WITH A CUT LIKE THIS...

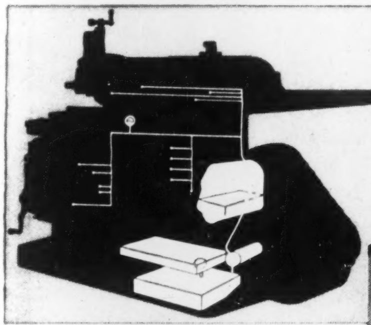


Demonstration cut.
Actual size steel chip, 2" cut .030" feed.

This tremendous cut demonstrates the extra strength, rigidity, and power in Cincinnati Shapers. It also demonstrates the ability of the 50 p.s.i. lubrication system to develop and maintain oil films under the heaviest loads.

Write for Catalog N-5.





50 p.s.i. system includes 50 micro filter, settling basin and reservoir. Transmission runs submerged in oil.

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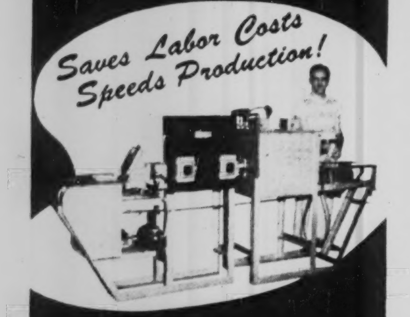
(3" BELT)



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Production Pointers from GISHOLT

TIME-
SAVING
IDEAS

Presented as a service to production men, we hope some of these interesting ideas, chosen from thousands of jobs, will suggest ways to help you cut time and costs in your own work.

HIGH PRODUCTION SETUP FOR THIN-WALL PARTS

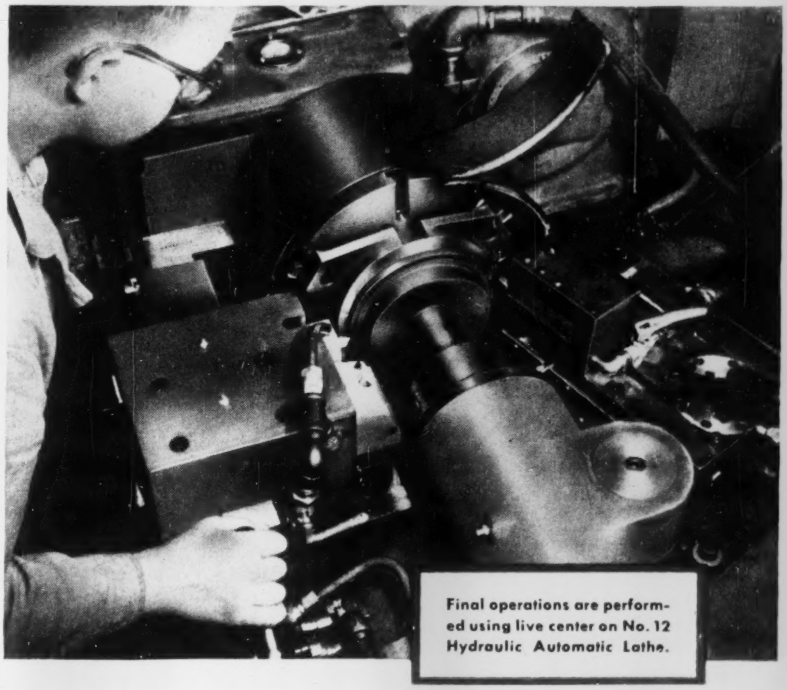
1 Man Tends 3 No. 12 Hydraulic Lathes on Fast, Precision Work

How to get the needed high production on tricky thin-wall parts requiring a large number of operations?

This manufacturer found the most practical solution was dividing the work among three No. 12 Hydraulic Automatic Lathes. By this method only one man is required to operate all three machines, turning out a completed part every 1.3 minutes . . . keeping costs at rock bottom.

Each No. 12 Hydraulic Lathe has the same type 12″ three-jaw air chuck for holding the stainless steel ring flange. Compensating serrated jaws, grip the workpiece with support for over three-quarters of the circumference. This eliminates danger of springing the part with total pressure.

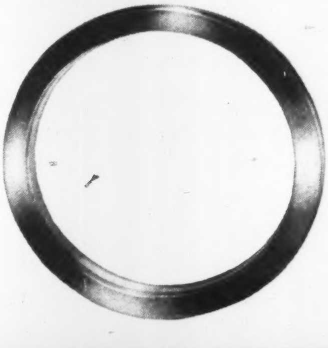
Here's fast, precision machining of delicate parts involving 13 operations on 3 No. 12 Hydraulic Lathes—with one operator.



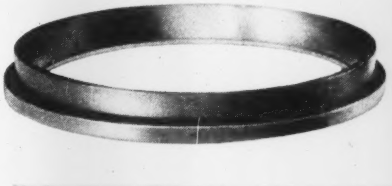
Final operations are performed using live center on No. 12 Hydraulic Automatic Lathe.

Operations are divided up this way:

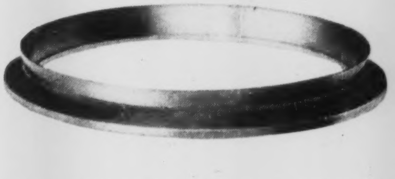
1st—*Part is held on the O.D. Turn, face, bore, counterbore and chamfer. This single operation completes the thick base section shown here.*



2nd—*Part is held on previously machined O.D. Rough turn O.D. Rough and finish turn the tapered I.D., face and chamfer. Part now looks like this.*



3rd—*Part is held on same surface and supported with a live center. Finish form the O.D., face and chamfer; part is then completed.*



Ask for bulletin showing the No. 12 Hydraulic Automatic Lathe doing 28 widely different jobs which illustrate its unusual flexibility.

TIME-
SAVING
IDEAS

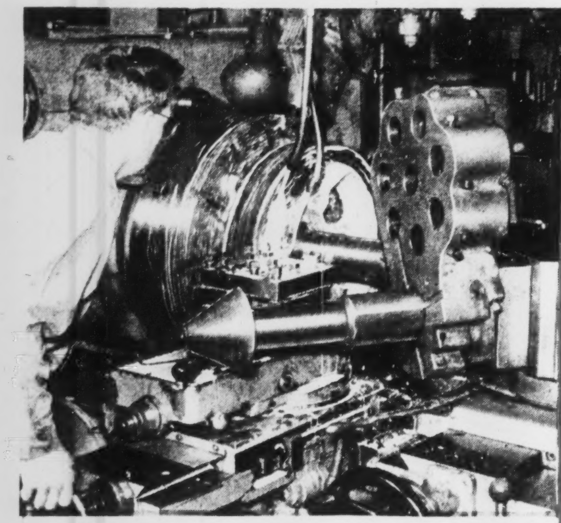
HOW HYSTER COMPANY CUT COSTS IN HALF ON HEFTY PARTS

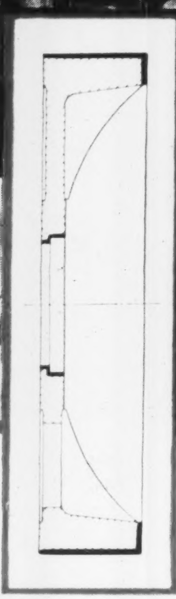
New Saddle Type Lathe Permits Multiple Cutting at Higher Speeds

Perhaps you, too, can take advantage of sheer power and rigidity in a turret lathe to cut your costs. Hyster Company of Portland, large manufacturer of handling equipment, formerly machined these heavy drum gears on a pre-war machine. Production of the 22", 260 Brinell parts averaged an hour for the first operation.

When they put the job on a new Gisholt 4L Saddle Type Turret Lathe, floor to floor time was cut in half—with parts completed in 30 minutes. Simultaneous machining from both turrets, plus faster operating speeds—and the ability to take heavier cuts, account for the increased production.

A 28" three-jaw chuck holds the part in the cored holes in the web. Rough and finish boring, counterboring and facing operations are handled from the cross-feeding hexagon turret. At the same time, tools on the square turret face and turn the O.D. Production is in lots of 100.

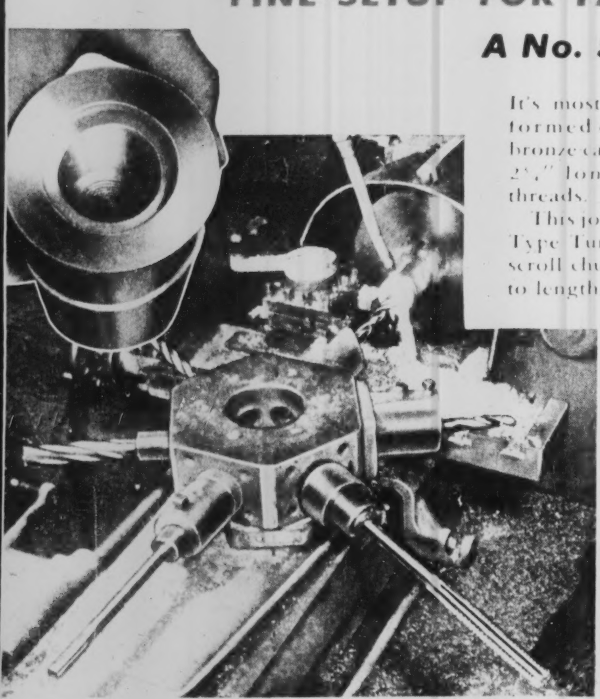

Operator Ed Davis keeps production going at top speed. ▲


Heavy lines show machined surfaces. ▶

An excellent example of how Gisholt power and rigidity permit multiple tooling and heavier cuts at higher speeds to save time and costs.

FINE SETUP FOR FAST MACHINING OF BRONZE NUTS

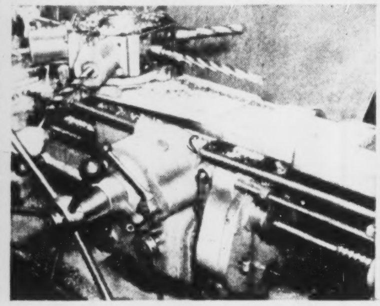
A No. 5 Ram Type Turret Lathe Job


◀ Turret Lathe setup for bronze nuts.

It's mostly inside work to be performed on these hard aluminum bronze castings calling for a ⅞" hole 2¼" long with four t.p.i. Acme threads.

This job is set up on a Gisholt Ram Type Turret Lathe with a three-jaw scroll chuck. The square turret faces to length. Next, three successive stations on the hexagon turret start drill, drill through and bore. At the same time, the O.D. is turned from the square turret.

The counterbore is then made and the hole is reamed full depth from the hexagon turret. The end is then formed from the square turret. Finally, the rough, semi-finish and finish taps are used with the threading attachment on the hexagon turret.


◀ Engaging the threading attachment.

This well planned tooling plus instantaneous speed changes with the Hi-Lo trip lever, keep production moving fast.

MAN-HOURS AND MACHINES

GISHOLT

TIME-SAVING IDEAS

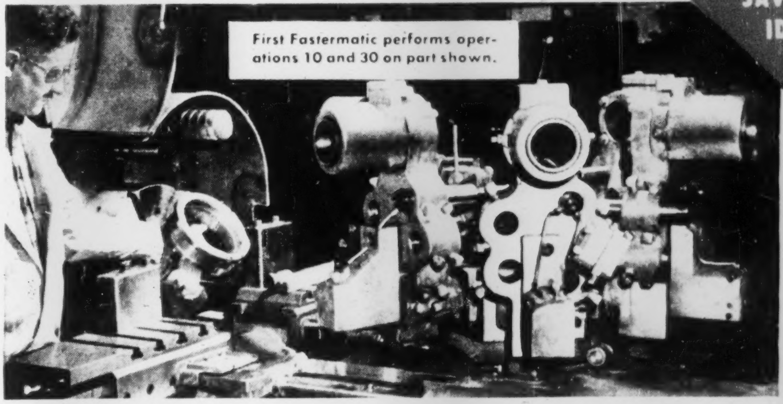
DOUBLE TOOLING FOR 4 OPERATIONS ON 2 MACHINES

Easy Changeover on Fastermatics Simplify Job

The question here was how to perform four separate machining operations on these steel bearings with a minimum of equipment . . . and with one operator, if possible.

Double tooling of a pair of Fastermatic Automatic Turret Lathes provided the answer. Here's how: Operations 10 and 30 are handled on the first machine, operations 20 and 40 on the other. A single operator, because of the Fastermatics' automatic cycles, is able to tend both machines.

With both sides roughed after operations 10 and 20, he makes easy changeover of the two machines for operations 30 and 40. Double tooling on both machines means simply a change of chuck jaws and some small tool holders.


First Fastermatic performs operations 10 and 30 on part shown.

As shown here, in operation 10, seven different surfaces are rough machined by tools mounted in the turret and both cross slides. Unused turret stations are by-passed. Nine surfaces are finish machined in operation 30—those already roughed out plus an additional counterbore and a necking operation. The other machine operates essentially the same.

With careful planning, 2 Fastermatics do double duty with minimum changeover.

SHOWING HOW "SPECIAL" MACHINING PROBLEMS CAN HAVE SIMPLE SOLUTIONS

. . . especially with the Simplimatic

Before machining this steel bevel drive gear, this producer had to get answers to:

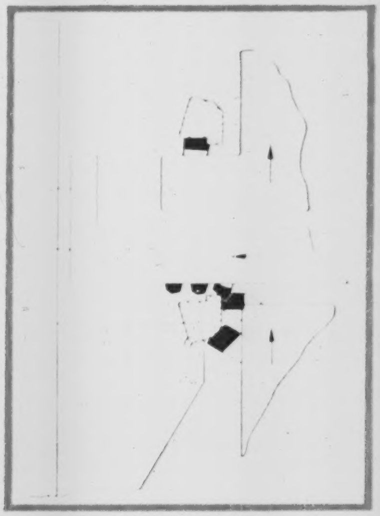
1. **How to bore, face and counterbore in 1st operation . . . made more difficult because the counterbore is on the chuck side of the piece.**
2. **How to get two tool slides within the 4" I.D. for simultaneous boring and counterboring.**
3. **How to spare the expense of a special machine and elaborate tooling . . . and yet have rapid changeover to the 2nd operation.**

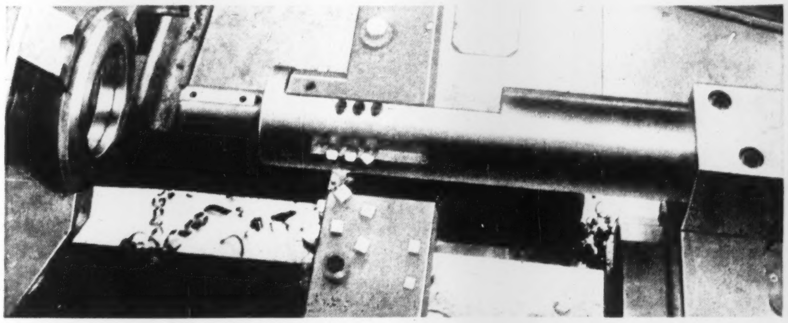
The ready answer to all three questions was the standard Simplimatic Automatic Lathe equipped with special tool blocks on standard slides.

The front slide feeds across the part to face and break the corner. The tool on the rear slide, which backfaces and forms the counterbore, is carried on a holder recessed into the oversize boring bar, thus providing room for getting into work. This boring bar, carried on the center slide which roughs, finishes and chamfers the bore, is supported by the pilot in the spindle (see layout).

Time is only 1.5 minutes, f. t. f.

The standard Simplimatic, with its infinite possibilities of slide and tool arrangements, avoids the need for a special and costly machine.





◀ Note how special tool block in rear slide starts from cutaway in oversize boring bar.

GISHOLT

EARMARK YOUR DEPRECIATION ALLOWANCES FOR NEW MACHINE TOOLS

TIME-SAVING IDEAS

HOW TO MULTIPLY OIL SEAL LIFE 8 TIMES

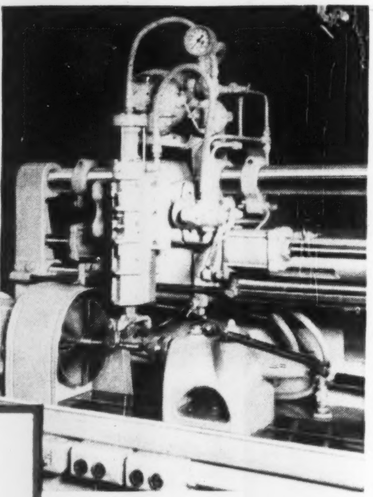
Woodward Governor Company Keeps Seals Oil-Tight Longer by Superfinishing

If oil seals in these diesel engine governors lose their oil-tightness, it means serious trouble: (1) Because the power piston operates in a vertical position, reciprocating action could cause loss of sump oil. Also, (2) any leakage at the main drive seal might result in engine oil contaminating governor oil and impairing its operation.

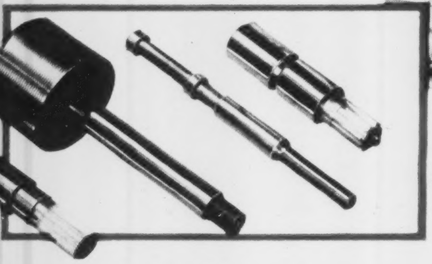
How to make the seals oil tight, and keep them that way longer? The solution was simple: by Superfinishing. It's shown in action here, at **Woodward Governor Company,** Rockford, Illinois.

The parts come to the Model 51-A General Purpose Superfinisher with a ground finish of 10 micro inches. After Superfinishing, they have a surface smoothness of 3 micro inches. Production is at the rate of 40 pieces per hour—with inspection for size and finish made by the operator, while the machine goes through its automatic cycle.

Here, at negligible cost, Superfinish assures oil-tight seals and at least 8 times longer seal life by removing all amorphous "smear metal."

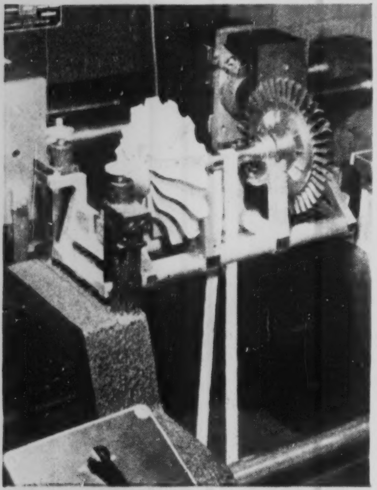


Close-up shows Superfinisher doing pilot valve of engine governor. ▲



◀ **Superfinished components of governor: drive shaft, power piston, pilot valve, rotating bushing.**

HIGH-FLYING PARTS BALANCED TO .020 OUNCE INCHES



Note how the impeller is balanced while running in its own ball bearings.

Direct Reading Shows Stock to Be Removed for Correction

Supercharger impellers for high-altitude aircraft call for dependable accuracy of balance.

Doing the job of assuring smooth, dependable operation is a Gisholt Type 3S DYNETRIC Balancer. The workpiece is rotated with its own ball bearings, thus duplicating normal operating conditions. Unbalance is read directly in terms of stock to be removed. This avoids errors in translating ounce inches into actual correction to be made. Stock is removed from the scallop on one end and the rotor on the other.

In a matter of seconds the entire operation—locating, measuring and correcting—is completed, and the part is balanced to an accuracy of .020 ounce inches. Gisholt Balancers are easy to set up and can be operated by average shop personnel.

To insure lasting, vibrationless operation, balancing of impellers is made a regular part of production—with a speed and accuracy not possible on any other equipment.

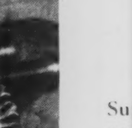
Textbook on balancing, **yours for the asking. Has all the facts, helpful information. Write for "Static and Dynamic Balancing."**

DYNETRIC BALANCERS
GISHOLT
DEVELOPED JOINTLY WITH WESTINGHOUSE ELECTRIC CORPORATION
DYNETRIC IS A TRADE MARK REG. U. S. PAT. OFFICE BY WESTINGHOUSE ELECTRIC CORPORATION

Complete Balancing School

Students from more than 100 companies have already completed courses in the Gisholt Balancing School—the only training of its kind available today. Write for details, starting dates.

No. 9-1053
580

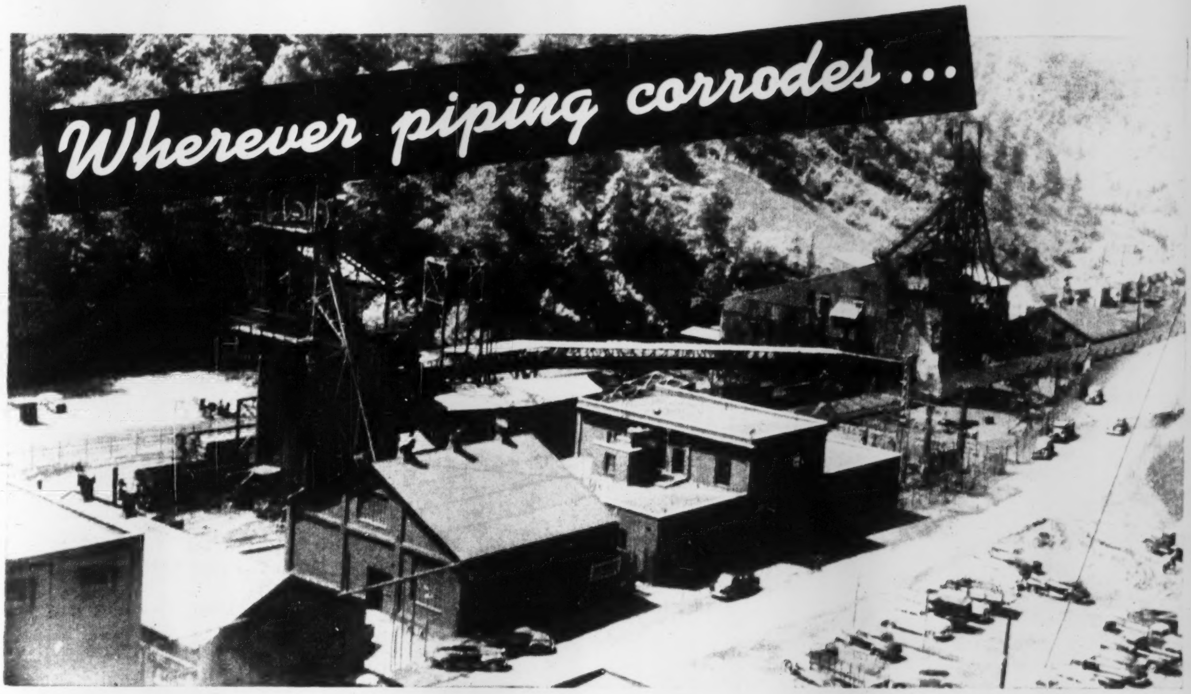


THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

Write for your copy of Gisholt's new general catalog.

GISHOLT
MACHINE COMPANY **Madison 10, Wisconsin**

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES



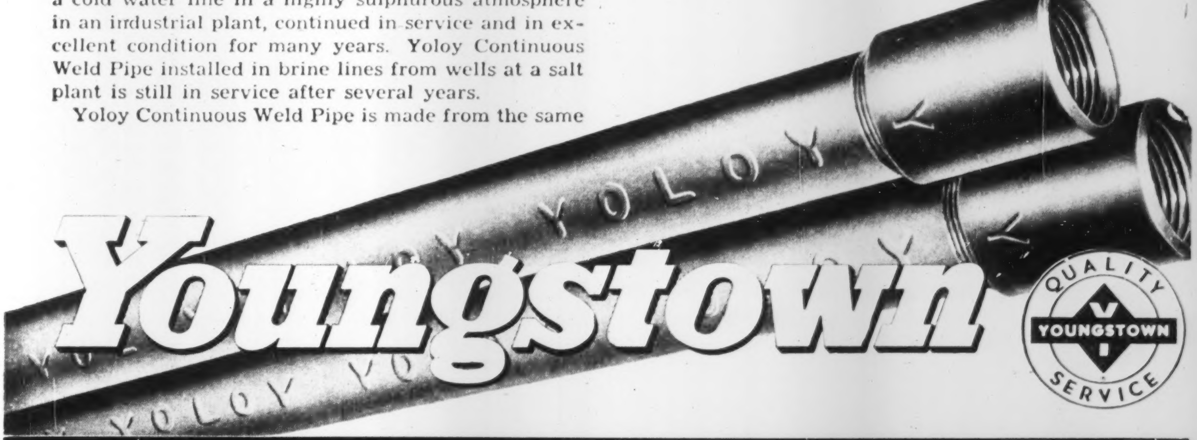
use YOLOY continuous weld pipe

Yoloy Continuous Weld Pipe offers distinct advantages for use in mines and industry where replacements due to corrosion are frequent. In addition, its use is recommended wherever piping is concealed—in commercial buildings, schools and residences.

In standard tests Yoloy steel has demonstrated that its resistance to atmospheric corrosion is four to six times greater than that of regular steels. In actual installations Yoloy Pipe has demonstrated that it has a high resistance to many other corrosive conditions.

For example, Yoloy Continuous Weld Pipe, used as a cold water line in a highly sulphurous atmosphere in an industrial plant, continued in service and in excellent condition for many years. Yoloy Continuous Weld Pipe installed in brine lines from wells at a salt plant is still in service after several years.

Yoloy Continuous Weld Pipe is made from the same nickel-copper steel composition that has proved so successful in service in the oil, mining, railroad, chemical, trucking and other industries where resistance to corrosion and abrasion is of prime importance. This pipe is easy to thread and fabricate with standard pipe tools. It can be electric or gas welded readily. It has high strength and high resistance to abrasion, shock and vibration fatigue. For further information, write or phone the Youngstown District Sales Office nearest you.



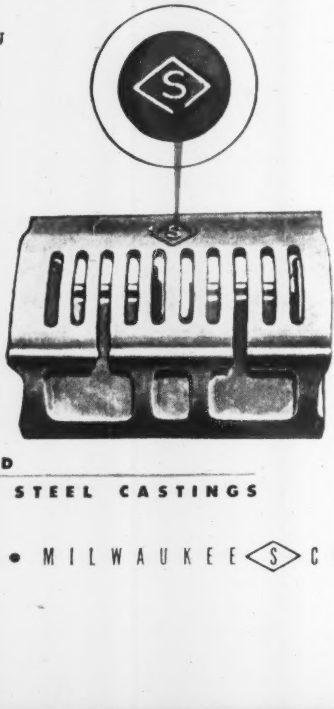
THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon, Alloy and Yoloy Steel
General Offices Youngstown 1, Ohio
Export Office - 500 Fifth Avenue, New York
COLD FINISHED CARBON AND ALLOY BARS - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - WIRE - PIPE AND TUBULAR PRODUCTS - CONDUIT - RODS - SHEETS - PLATES - BARS - RAILROAD TRACK SPIKES

if Michelangelo were alive . . .

. . . he would probably consider the technical and metallurgical perfection of Sivyer castings as a work of art. A foundryman of no mean ability . . . he would be quick to recognize the craftsmanship of Sivyer methods . . . the know-how and precision with which a wide variety of complicated castings are produced. Sivyer insistence on the highest standards of compositional accuracy—uniformity of internal structure, dimensional accuracy and good finish means lower costs—better performance. It will pay you to consult Sivyer on your steel casting problems.

the HALLMARK of better steel castings

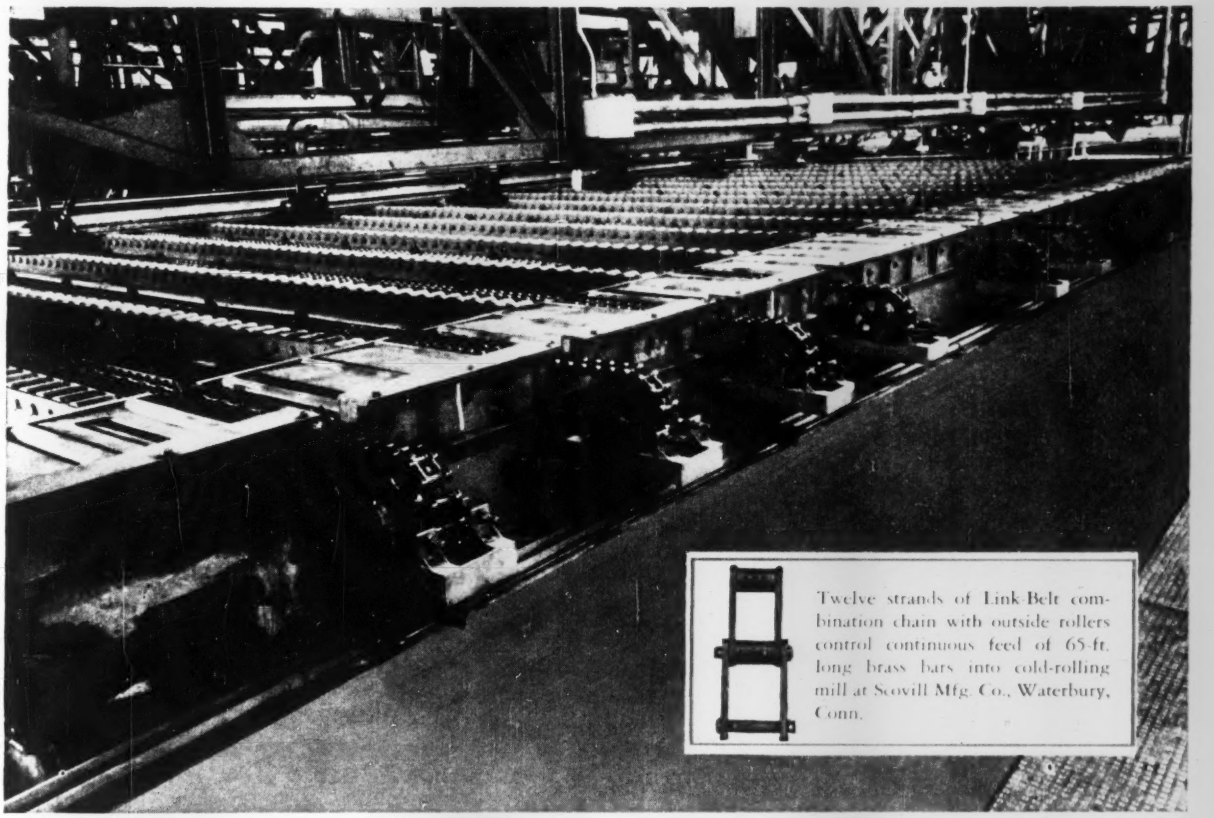
Sivyer castings are identified with the famous ◇S marking —your assurance of the finest in high alloy and specification steel castings.



SIVYER

SPECIALISTS IN HIGH ALLOY AND SPECIFICATION STEEL CASTINGS

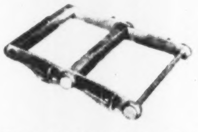
SIVYER STEEL CASTING COMPANY • MILWAUKEE ◇S CHICAGO ◇S



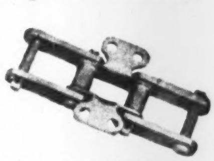
Twelve strands of Link-Belt combination chain with outside rollers control continuous feed of 65-ft. long brass bars into cold-rolling mill at Scovill Mfg. Co., Waterbury, Conn.

What is the right chain for your drive or conveying job?

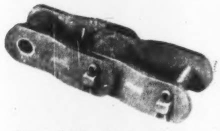
Typical chains from the complete LINK-BELT line



Class H drag chain—for drag conveyors, handling shavings or other refuse in runways or troughs.



Class C combination chain—popular, durable, low cost design for elevators, conveyors.



Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.

Transfer chain with tilting dogs—for plate and slab travel, loads up to 300,000 pounds.

You'll find the answer in LINK-BELT's complete chain line... a size and type for every need

WHETHER it's a high-hp. heavy-impact drive or relatively slow-speed conveying service—you can get the *one* chain that best meets your needs from Link-Belt's complete chain line. Our engineers will be glad to work with you—help you select the right chain for your requirements. And you can be sure that any Link-Belt chain you buy is quality built for longer life.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,208-B

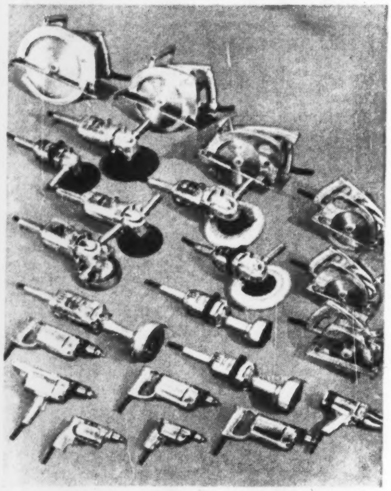
Warner & Swasey 5-Spindle Automatics give Thor a more flexible turning department

INCREASED SALES VOLUME, new models, and constantly varying demand for different tools created this need at Thor Power Tool Co., Aurora, Illinois. And Thor found the answer in two Warner & Swasey 5-Spindle Automatic Bar Machines.

Most of the production on Thor's wide range of power tools, involving many different parts, is short and medium run work. Their conventional multi-spindle machines were idle too much of the time for setup changes. And because of close tolerances and tough work materials, second and third operation work from the automatics had to be done on other machines.

The new Warner & Swaseys, with *quick-set* quadrant mechanisms for stroke and feed changes, drastically cut downtime, taking over marginal jobs from single as well as the conventional multi-spindle automatics. They improved the balance of work everywhere. Changeovers on similar jobs now run only about an hour, so they can handle even 100-piece lots in cascaded work. Complete change of setup averages only 3½ hours.

Because of their outstanding success with these 5-Spindle Automatics, Thor has since added five more. The addition of Warner & Swasey Automatics to *your* plant can similarly give you the advantages of high precision mass production—plus the flexibility to handle smaller lots economically.



A few of the 1500 air and electrically powered tools made by Thor.

Seven Warner & Swasey 5-Spindle Automatics in plant of Thor Power Tool Co., Aurora, Illinois.

WARNER
&
SWASEY
Cleveland
PRECISION
MACHINERY
SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

FARRELL-CHEEK

CAST TOOTH GEARS

A COMPLETE SERVICE!

FARRELL-CHEEK STEEL CO. SANDUSKY, OHIO, U.S.A.

What's BEST FOR

THE
SB
A60-M5-V10

CARBO

TRADE

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, New York

YOU is BEST for us!

You get UNBIASED COUNSEL based on all abrasive methods

Your business, in mass production of parts or finished assemblies, is the problem of generating close tolerance sizes, of producing high surface finishes, of removing stock. The business of CARBORUNDUM is the exclusive ability to recommend and furnish you the specific type of abrasive product which will give you highest quality at lowest cost, on every operation you perform.

Take surfacing, for instance. There are at least 11 different methods of grinding plane or flat surfaces with abrasives. Is your present method the best—the most economical? How can you be sure? Ask CARBORUNDUM . . . for CARBORUNDUM alone has a complete branded line of grinding wheels *and* coated abrasives *and* tumbling and polishing grains. Only CARBORUNDUM can recommend without bias, on the sole basis of what's best for you.

Or perhaps you manufacture table glassware. You can engrave the decorations with a grinding wheel—or you can etch them with high-velocity abrasive grain. You can finish the edges with abrasive belts, or with a grinding wheel. Whatever your method, CARBORUNDUM alone can supply *all* the abrasives you need with *one-source control* of quality . . . quality that's constant, identical, dependable—thus economical.

Several ways to do one operation? Call in CARBORUNDUM. Several processes on one part? Call in CARBORUNDUM. Either way, you win.

Call your CARBORUNDUM *Salesman or Distributor* today!

He's your best bet for complete stocks, prompt delivery . . . and best of all, experienced counsel on *every* new development in the *entire* field of abrasives. He's in the yellow pages under "Abrasives" or "Grinding Wheels." Phone him today—it's to your profit!

Ready now—your free copy of the new big COATED ABRASIVE SELECTOR catalog . . . containing detailed recommendations for both machine and hand sanding operations on tough and soft metals, glass, plastic, wood. Phone for it today.

RUNDUM

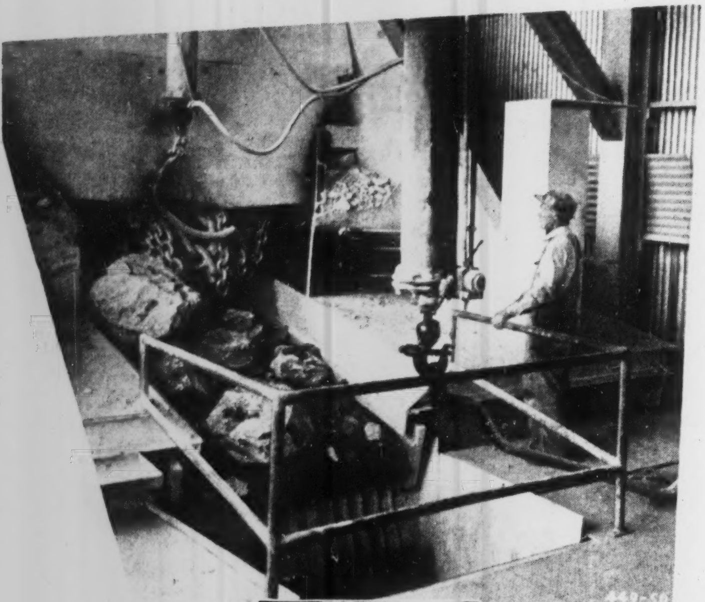
MARK

. . . the ONLY source for EVERY abrasive product you need

80-11

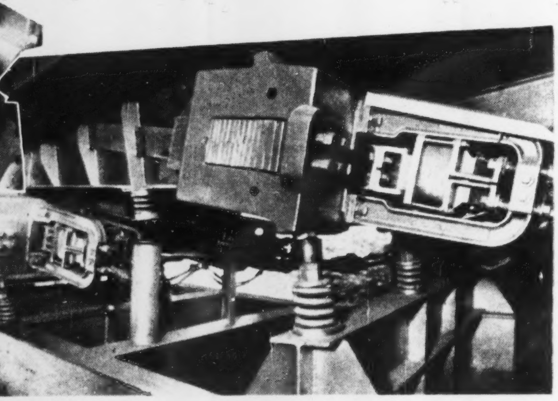
JEFFREY VIBRATING FEEDERS

assure steady flow



Acme's Jeffrey-Traylor Vibrating Feeder

Handles 7-ton Limestone Rocks



Jeffrey No. 5HM4 Vibrating Units Give Fixed Flow

Acme Installation Handles Millions of Tons of Rock With Finger-tip Control

The Jeffrey-Traylor electric vibrating primary feeder shown here keeps even 7-ton blocks of quarry-run rock moving smoothly into the primary jaw crusher at the Acme Limestone Co. plant, Fort Spring, W. Va.

The feeder is 5′ wide by 11′, 6″, powered by four Jeffrey-Traylor electric vibrators, with the operator maintaining precise load control by simply turning a rheostat knob. Rock comes off a single stone deep.

More than a million tons of crushed stone have been handled on one mild steel feeder deck. Acme reports, "This machine was operated throughout last season without any change or one cent of maintenance. It meets every requirement 100 per cent."

Write for Catalog 830.

Jeffrey-Traylor vibrating feeders deliver the load *when* and *where* you want it. Our engineers will gladly show you how.

THE JEFFREY MANUFACTURING CO.

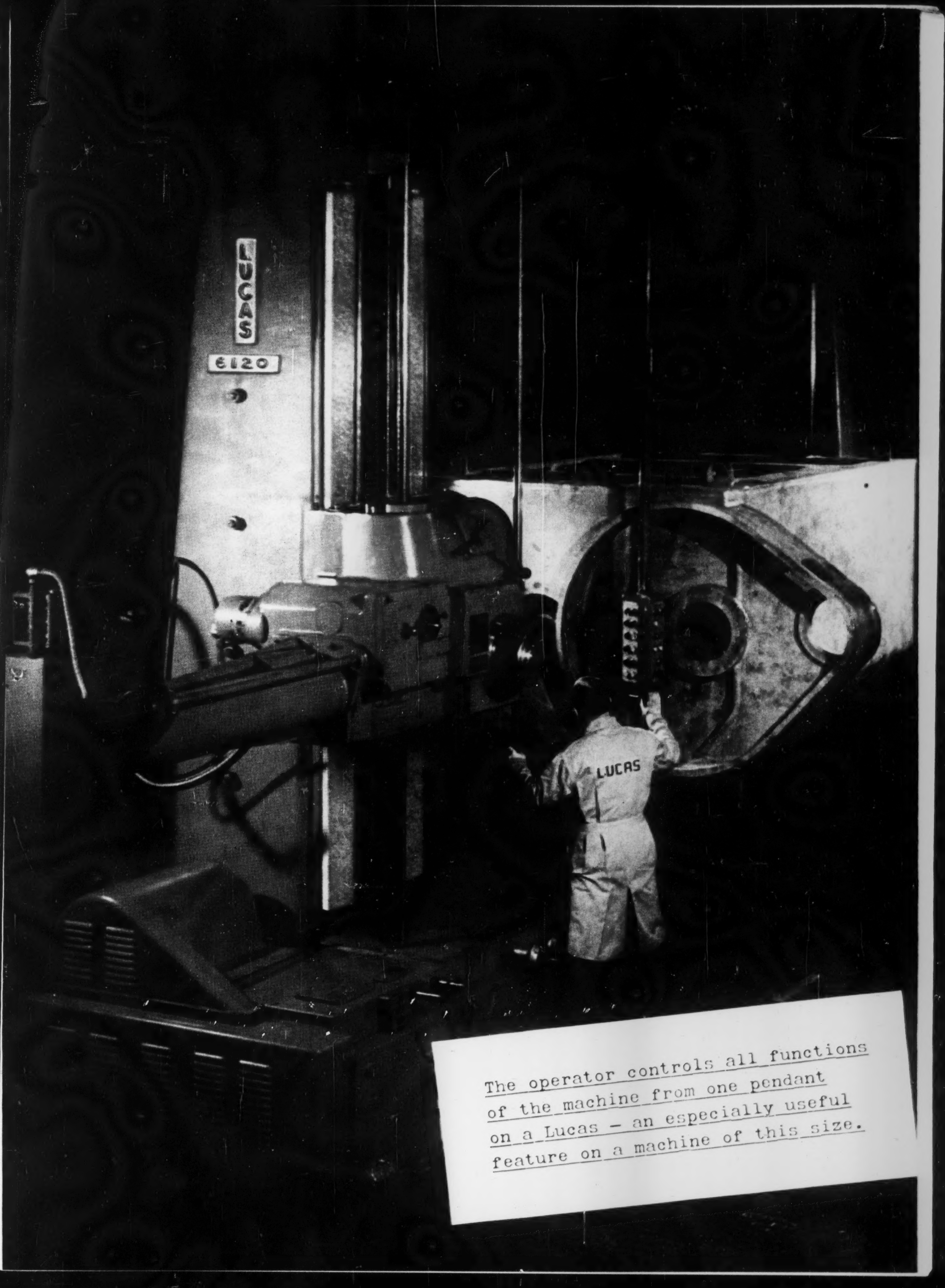
ESTABLISHED 1877

Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
. . .IT'S A JOB FOR JEFFREY!


LUCAS
E120
LUCAS

The operator controls all functions of the machine from one pendant on a Lucas – an especially useful feature on a machine of this size.

Machines for Making Progress

When a manufacturer says sales are "so-so" today he is probably talking about a volume beyond his fondest dreams of a dozen years ago. But payroll, fringe benefits, taxes, material costs, and generally increased expense may have turned a period of booming sales into one of profitless prosperity.

In such a situation a manufacturer's best friends are his machine tools. But such tools must be much more than mechanically sound — they must have the accuracy and productivity that 1953 standards demand, or they might just as well be worn out.

New Britains are *machines for making progress.* More important — they're *machines for making profits.*

AUTOMATIC BAR AND CHUCKING MACHINES
PRECISION BORING MACHINES
LUCAS HORIZONTAL BORING, DRILLING & MILLING MACHINES
NEW BRITAIN +GF+ COPYING LATHES

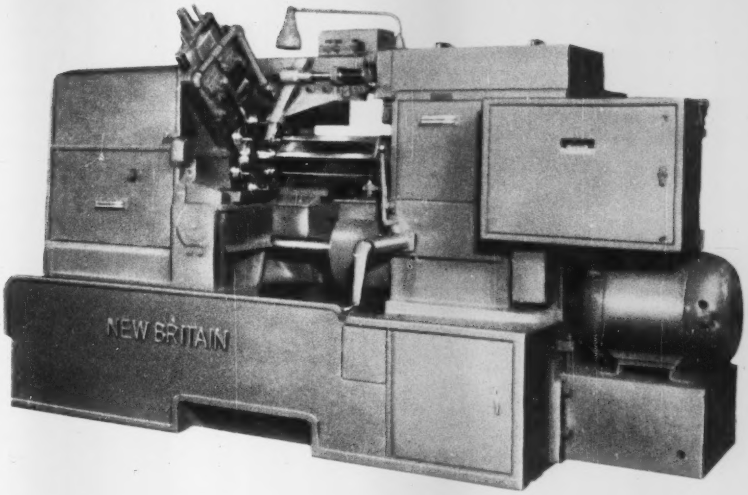
THE

NEW BRITAIN MACHINE COMPANY

New Britain-Gridley Machine Division
New Britain, Connecticut
Lucas Machine Division
Cleveland 8, Ohio

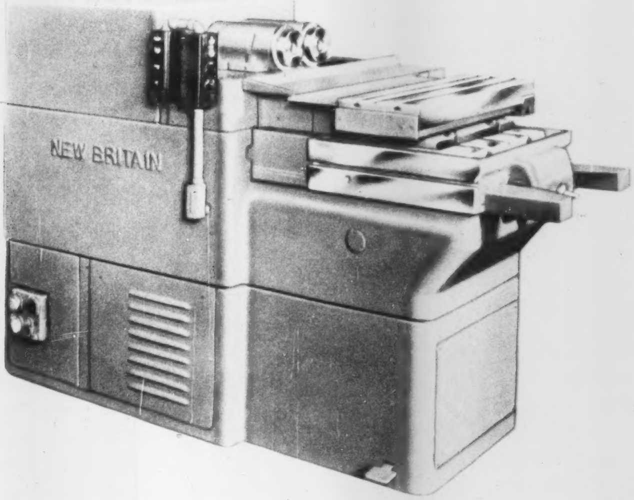
MODEL 61

New Britain builds a complete line of multiple spindle bar machines in a range of sizes up to 2¼" dia. Ruggedly built, they are capable of doing heavy duty jobs, running at high speeds and consistently holding close tolerances. These automatics with their time-tested, profit-producing features are constantly proving themselves in modern high production plants.



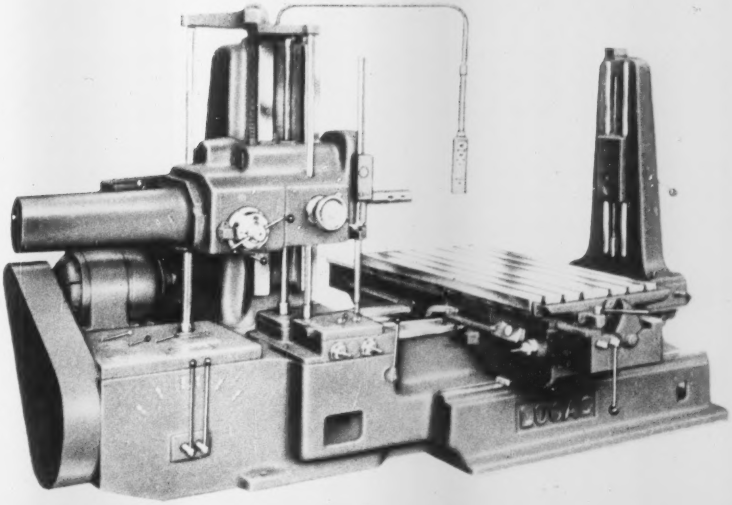
MODEL 37

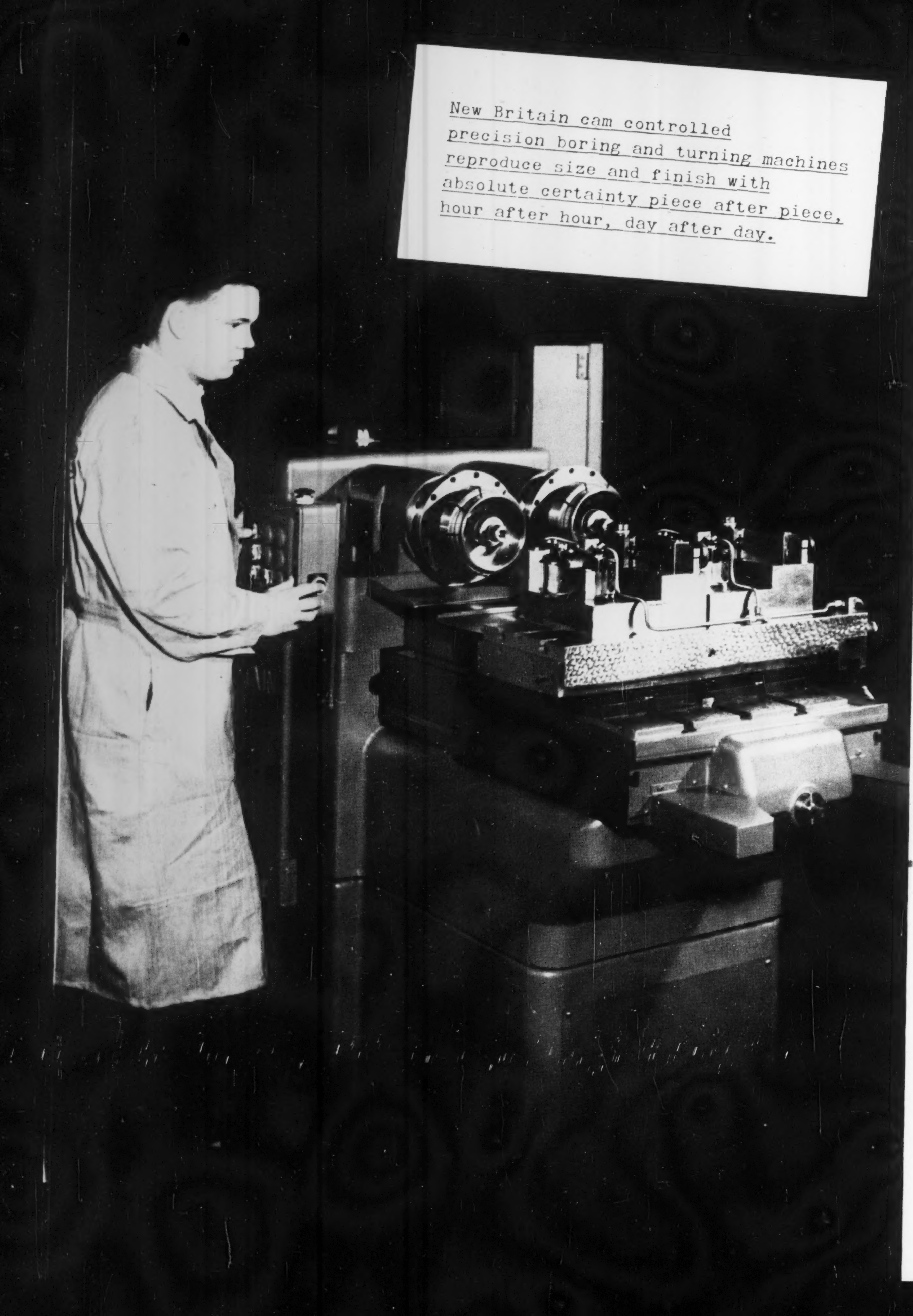
New Britain makes a complete line of cam controlled precision boring machines for both straight and contour work. Model 37, illustrated, generates all types of radii, chamfers, undercuts, grooves, faces, etc., plus straight boring and turning. A fast, accurate, positive, and simple machine, it reduces the manufacturing cost of a wide variety of sizes and types of pieces.



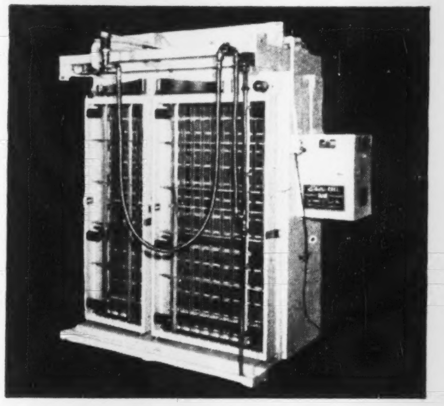
LUCAS Precision

A Lucas Precision Horizontal Boring, Drilling and Milling Machine will perform many operations in sequence on one piece or a thousand, from small components to large weldments like the one shown in the photo on the front side of this insert. It will not only make heavy roughing cuts but will also finish to the close tolerances required in today's precision manufacturing. It is quickly set up for short runs and incorporates Automatic Power Positioning for multiple operation work.

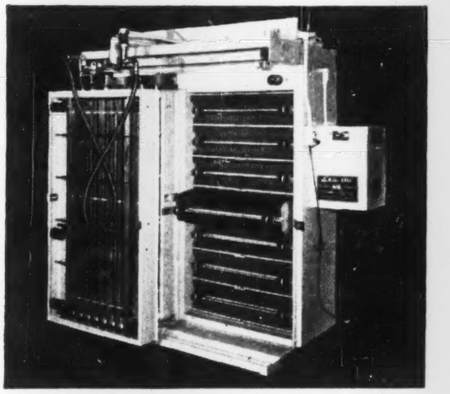




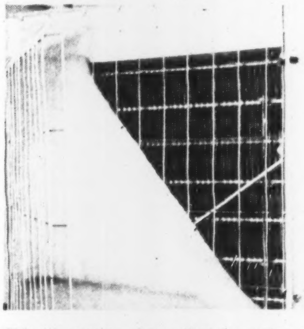
New Britain cam controlled precision boring and turning machines reproduce size and finish with absolute certainty piece after piece, hour after hour, day after day.



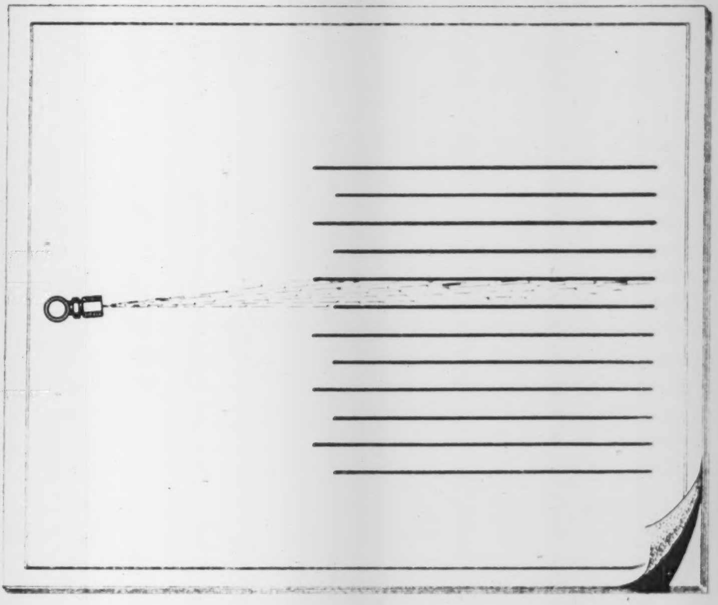
The above illustration shows the hinged ionizer section closed with the new Type "H" Washer in normal position when precipitator is operating. A push-button switch, located on the right-hand side of the above illustration, operates the washer and opens the solenoid valve that controls the water supply. The header makes a complete trip across the face of the precipitator and returns, automatically, to the starting position where it contacts a limit switch that breaks the electrical circuit.



In the above illustration the ionizer section has been opened to show that the washer does not interfere in any way with access to the collector assembly. As in the standard Electro-Cell, the plates are completely removable for thorough cleaning or inspection whenever necessary without the use of any tools or accessories whatsoever.



This illustration shows that the water eliminator frame has been opened to show density of the AMER-glas blanket and the ease with which the pad may be removed from the precipitator. If the precipitator is properly maintained and energized electrically at all times during fan operation, the afterfilter will require a minimum amount of attention. Because it is made of fine hair-like glass filaments, the pad is easy and pleasant to handle.



here's the reason for the 5° lead on the traveling spray nozzles

on the

ELECTRO-CELL TYPE "H" WASHER

The new type "H" Washer is incorporated as an integral part of the ELECTRO-CELL precipitator and provides "push-button" control of the cleaning operation—thus greatly reducing maintenance and increasing the efficiency of the famous ELECTRO-CELL.

The outstanding feature of the new Type "H" Washer is the rotation of the header at each end of the travel to advance the spray nozzles approximately 5° from the vertical. Result—the best possible penetration of the spray water, assuring thorough coverage of the entire depth of the collector plates with the resulting maximum cleaning action and a minimum of water!

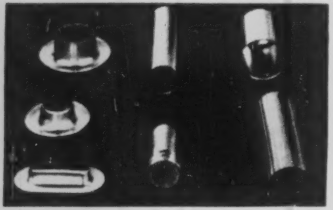
The Type "H" Washer is another "first" from AAF and offers better cleaning efficiency and water economy advantages over the standard fixed-nozzle method of "flooding".

Write the American Air Filter Company for technical data and descriptive information on this latest AAF achievement. And remember—AAF experience will help you solve all your air cleaning problems.

expect the best from ..... AAF

American Air Filter
COMPANY, INC.
443 Central Avenue, Louisville 8, Ky.
American Air Filter of Canada, Ltd., Montreal, P. Q.

STEAM ATMOSPHERE HEAT TREATMENT *is becoming standard for many high speed steel cutting tools. It's effective for tools machining average jobs . . . is even better for treating tools handling tough jobs, such as working high-chrome, high-carbon steels.*



COST CUTS OF 53% *. . . in annealing and pickling, effected through steam-atmosphere annealing of these brass stampings.*

For full information about Steam Homo tempering, send for the NEW 12 page catalog, "L&N Steam Homo Method for Heat-Treating". Write our nearest office, or 4957 Stenton Ave., Phila. 44, Pa.

Loads are easily handled in the Steam Homo Furnace.

Want Heat-Treating Versatility?

CHECK THESE STEAM HOMO® ADVANTAGES

You get many outstanding heat-treating advantages when you buy the versatile Steam Homo furnace. Here's why:

- Steam Homo gives you scale-free heat-treating of both ferrous and non-ferrous parts at temperatures to 1150 F.

If you're heat-treating ferrous parts:

- The tough oxide film that Steam Homo imparts adds 20–25% more life to high-speed tool steels.
- Steam-treating adds appreciably to the hardness and compressive strength of powdered iron compacts.

Or if you're heat-treating non-ferrous parts:

- Steam atmosphere in many cases eliminates subsequent surface cleaning and pickling operations.

But in both cases you'll get:

- A compactness which makes the Steam Homo equipment ideal for installation directly in production lines.
- A steam atmosphere heat-treating process which is entirely safe and easy to follow.

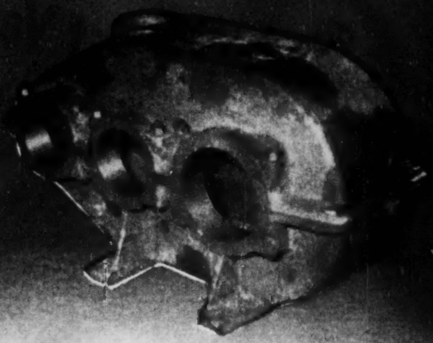
Standard Steam Homo furnaces are made in a variety of sizes . . . from those with work spaces as small as 11½" x 15" to those as large as 28" x 60". All are supplied as assembled units, ready for installation.

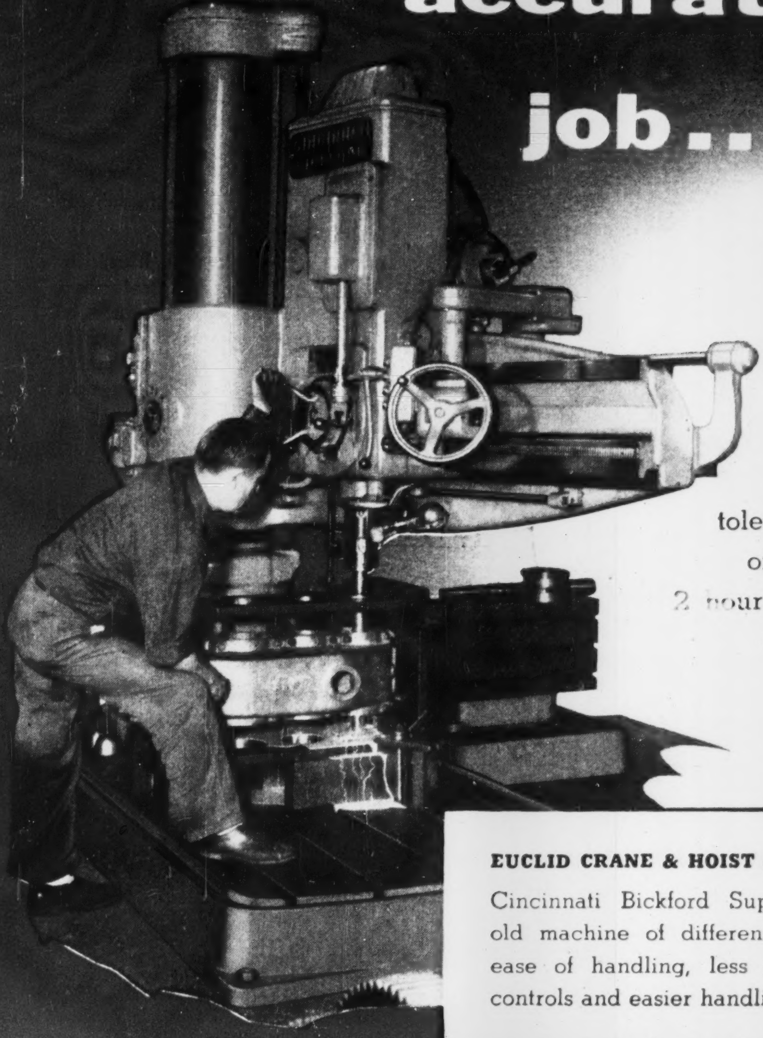
LEEDS & NORTHRUP
instruments *automatic controls • furnaces*

Jrl Ad T-620(40)

doubling production...

on this big, accurate job...





Photos courtesy of The Euclid Crane & Hoist Co., manufacturers of Overhead Traveling Cranes.

Here is another example of the accuracy and productivity of Cincinnati Bickford Super Service Radial Drills. Holes of 4.750″ and 6.250″ diameters are bored and held to .001″ tolerances in this steel casting. Time of operations was reduced from 2 hours and 30 minutes to 1 hour and 40 minutes—practically doubling speed of production.

Write for Booklet R-29.

EUCLID CRANE & HOIST says:

Cincinnati Bickford Super Service Radial "replaced an old machine of different make—machine brought greater ease of handling, less operation fatigue thru convenient controls and easier handling."

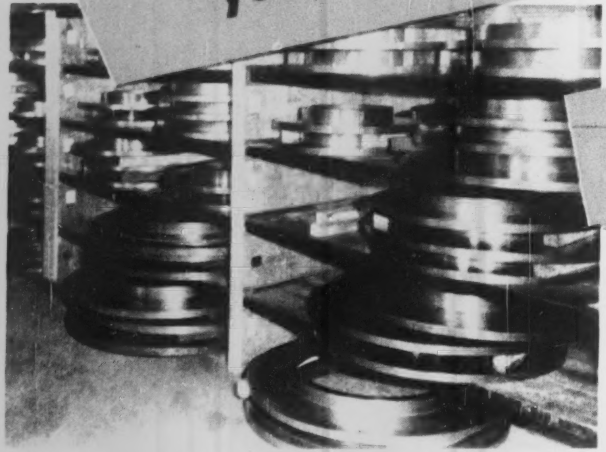
CINCINNATI BICKFORD

RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio U.S.A.

These Rust Veto TWINS answer most of your rust preventive problems!



HOUGHTON RUST VETO 377 INDOORS

. . . the modern thin-film polar type preventive that is a "natural" for indoor protection.

Rust Veto 377 withstands severe humidity tests—passes rigid salt bath spray protection tests. It deposits a thin film which clings to parts through high polar attraction, but is easily removed. Resists oxidation. Won't stain. Sprayable at 40° F., it provides low cost coverage however applied.

HOUGHTON RUST VETO 344 OUTDOORS

. . . the rapid-drying, dark solvent solution that provides full protection for long periods outdoors.

Rust Veto 344 produces a dry, asphaltic type of film which can be handled after 4 hours drying. Can be used on steel, brass, aluminum or copper. Wipes off readily with solvent soaked cloth. Withstands 30 cycles in 100° humidity, ultraviolet light test. Won't harden or crack—it's rosin-free.

PREVENT
RUST

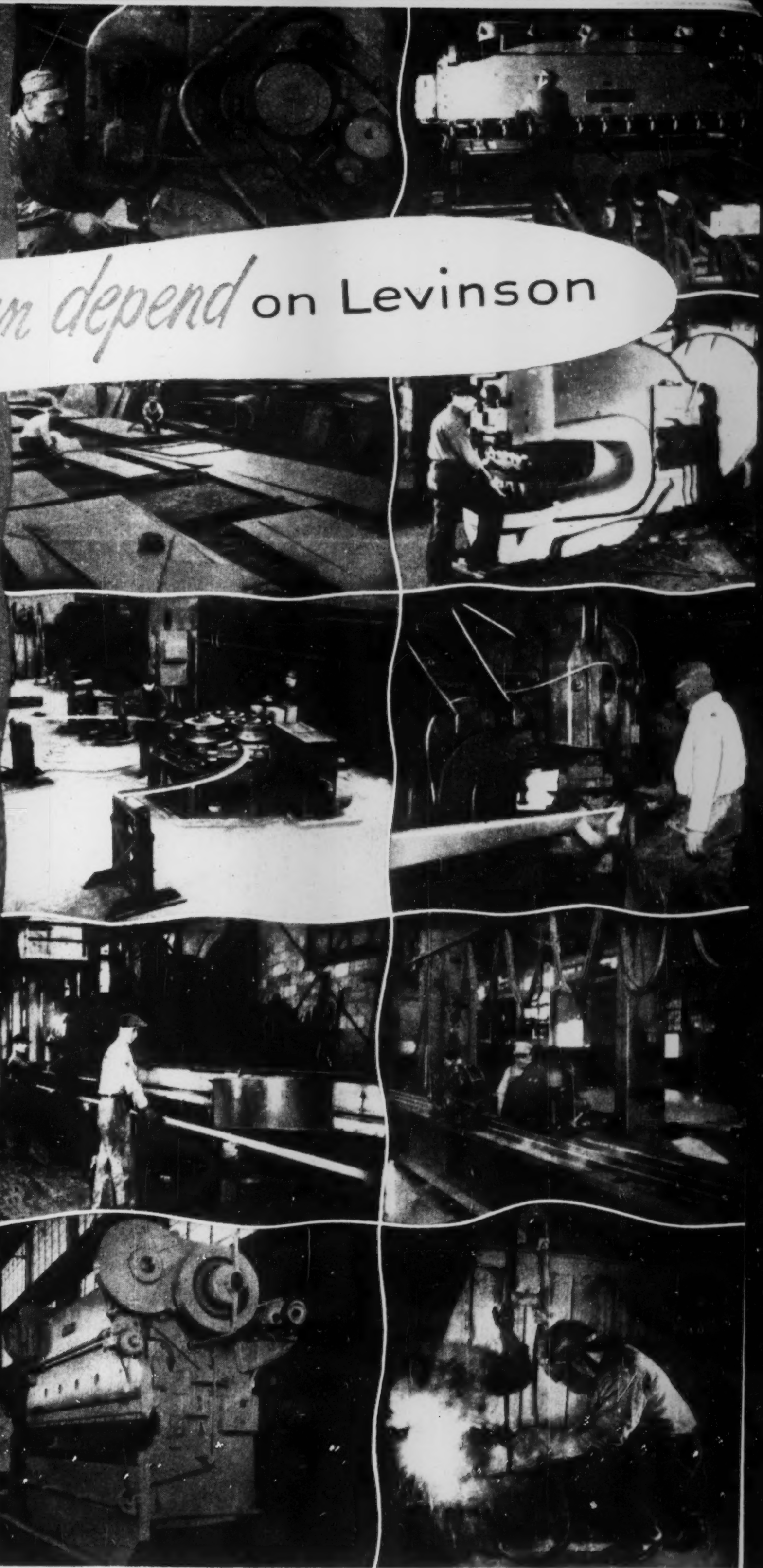
WRITE FOR BULLETIN covering the wide range of Houghton "Rust Vetoes" for varying types of protection—for parts or products on shelves or in shipment, idle or in use. (To meet Government specifications, Houghton "Cosmolines" are widely used.) E. F. Houghton & Co., 303 W. Lehigh Ave., Phila. 33, Pa.

RUST VETO and COSMOLINE
. . . products of

E. F. HOUGHTON & CO.
PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . . .

why you *can depend* on Levinson



Fabrication for every industrial requirement

Always striving for "on time" deliveries

Broad understanding of your problem

Rush emergency demands find us prepared

Immediate attention to any inquiry

Co-operation a Levinson by-word

A completely equipped plant with skilled personnel

The customer always comes first

Industrial buyers recognize Levinson performance

One policy to all . . . . that you be satisfied

Now is the time to put our service to the test

The **Levinson** STEEL COMPANY

20TH & WHARTON STS., PITTSBURGH 3, PA.

LS 36

Fabricators of Steel for Industry

MELTRITE
PIG IRON

Demand Reflects Value

Making MELTRITE
Pouring molten iron into moulds at the pig machines.

MORE USED THAN ANY OTHER MERCHANT PIG IRON

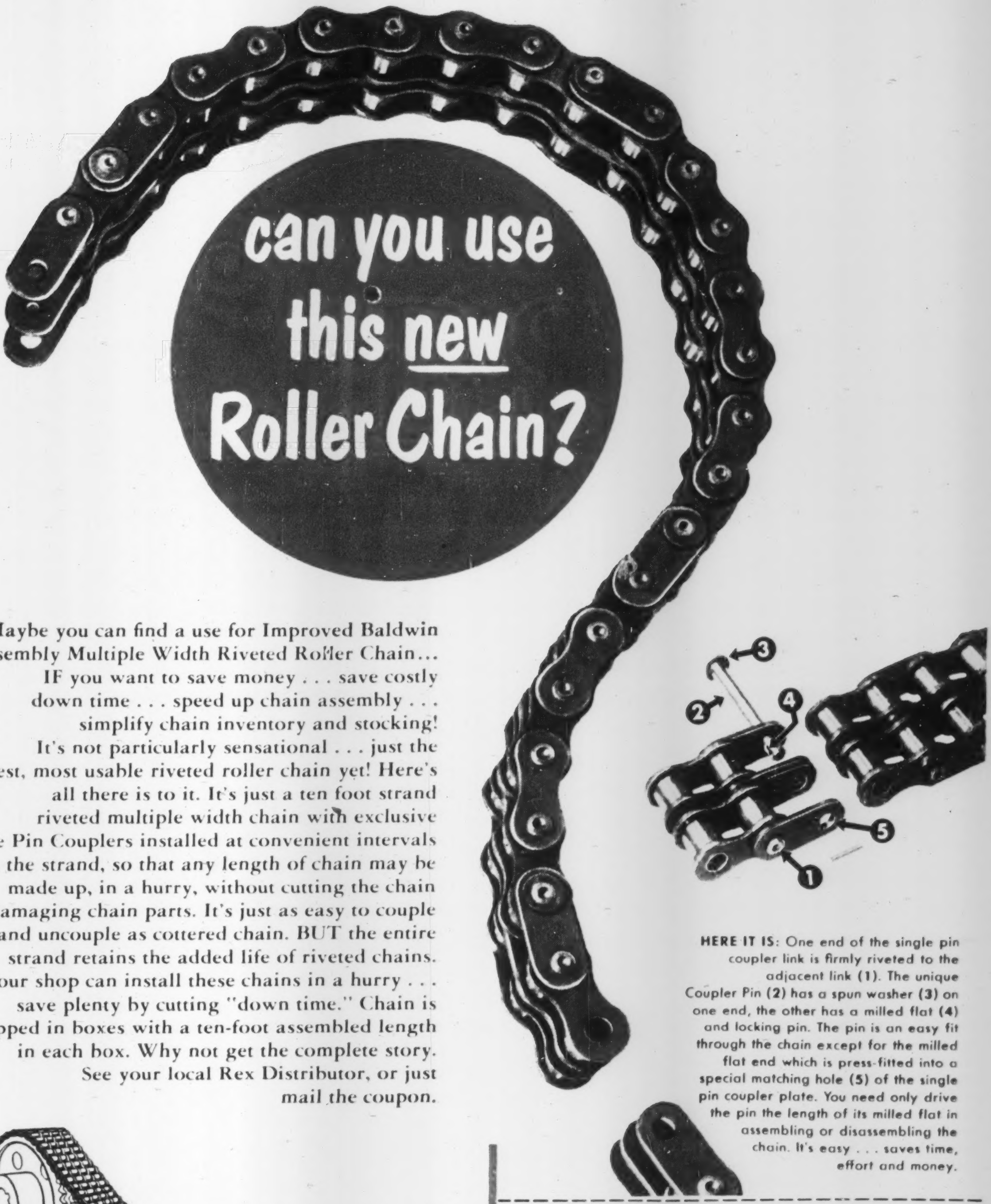
P M

70 years of service to industry

PICKANDS MATHER & COMPANY
UNION COMMERCE BUILDING • CLEVELAND 14, OHIO
CHICAGO • CINCINNATI • DETROIT • DULUTH • ERIE • GRAND RAPIDS
GREENSBORO • INDIANAPOLIS • MINNEAPOLIS • ST. LOUIS • WASHINGTON

IRON ORE • PIG IRON • COAL • COKE

can you use this new Roller Chain?



Maybe you can find a use for Improved Baldwin Assembly Multiple Width Riveted Roller Chain... IF you want to save money . . . save costly down time . . . speed up chain assembly . . . simplify chain inventory and stocking! It's not particularly sensational . . . just the handiest, most usable riveted roller chain yet! Here's all there is to it. It's just a ten foot strand riveted multiple width chain with exclusive Single Pin Couplers installed at convenient intervals in the strand, so that any length of chain may be made up, in a hurry, without cutting the chain or damaging chain parts. It's just as easy to couple and uncouple as cottered chain. BUT the entire strand retains the added life of riveted chains. Your shop can install these chains in a hurry . . . save plenty by cutting "down time." Chain is shipped in boxes with a ten-foot assembled length in each box. Why not get the complete story. See your local Rex Distributor, or just mail the coupon.

HERE IT IS: One end of the single pin coupler link is firmly riveted to the adjacent link **(1)**. The unique Coupler Pin **(2)** has a spun washer **(3)** on one end, the other has a milled flat **(4)** and locking pin. The pin is an easy fit through the chain except for the milled flat end which is press-fitted into a special matching hole **(5)** of the single pin coupler plate. You need only drive the pin the length of its milled flat in assembling or disassembling the chain. It's easy . . . saves time, effort and money.

BALDWIN-REX®
ROLLER CHAINS

A PRODUCT OF
Chain Belt COMPANY
OF MILWAUKEE

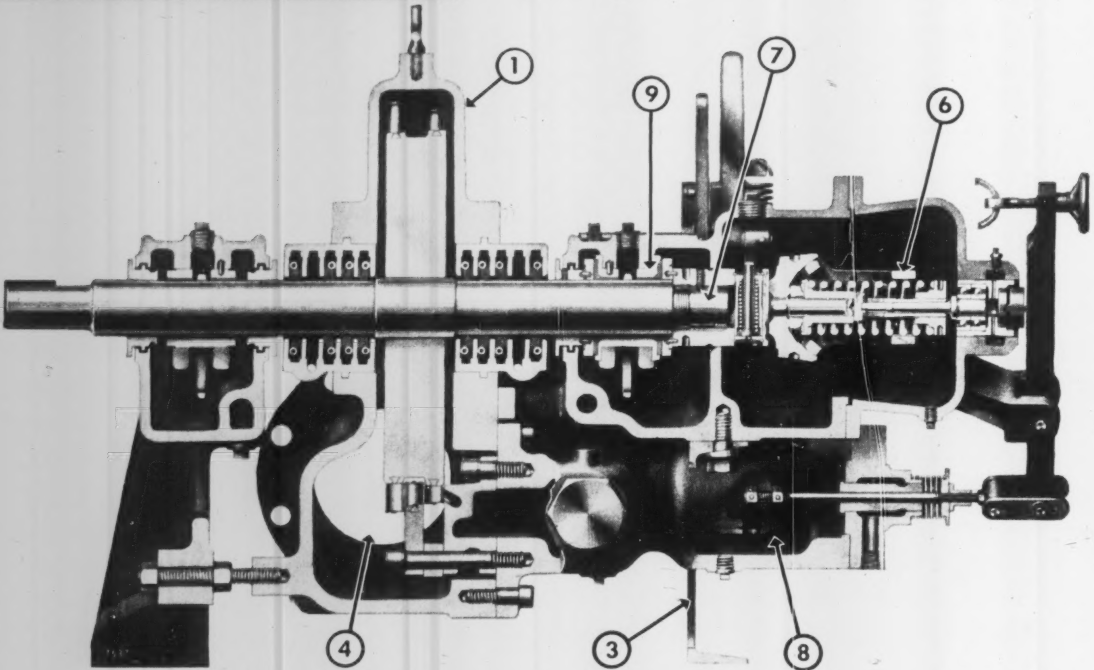
53-405A

CHAIN BELT COMPANY
Baldwin-Duckworth Division
326 Plainfield Street
Springfield 2, Mass.

Gentlemen:
Please send my copy of Bulletin No. 52-2

Name..
Firm..
Address..
City.................................*Zone*......*State*.......

NEW DE LAVAL HCB SINGLE STAGE TURBINE *can be ordered from stock*



1 Case and Cover Split Horizontally on centerline for ease of maintenance.

2 True Centerline Casing Support assures distortion-free radial expansion. *Not shown.*

3 Flexible Support at governor end provides for axial expansion.

4 Exhaust Opening either right or left side for installation flexibility.

5 Steam Strainer, protecting trip and governor valves, is *removable* for cleaning without breaking steam connections. *Not shown.*

6 Constant Speed Governor features governor weights pivoted around frictionless surfaces.

7 Complete Governor Assembly is now *replaceable as a unit.*

8 Balanced Single Seated Main Governor Valve has proportional flow characteristics for sensitive, positive control.

9 Shaft Locating Bearing of adjustable double collar type.

Horsepower: 100 MAX
Steam Pressure: 300 PSIG MAX
Steam Temperature: 550F MAX
Exhaust Pressure: 25 PSIG MAX
Speed: 4,000 RPM MAX
Steam Inlet: 2″–250# ASA FLG.
Exhaust: 6″–150# ASA FLG.
Weight: 1,200 LB

Here's the new De Laval HCB Single Stage Turbine which is now "on the shelf" . . . ready for immediate shipment. This mechanical drive turbine is simple, rugged, designed for long economical life and low maintenance. For example, note the true centerline casing support, the replaceable governor, the removable steam strainer. Investigate all the advantages of this versatile driver. It is ready to handle—*at low cost*—a variety of applications in your plant.

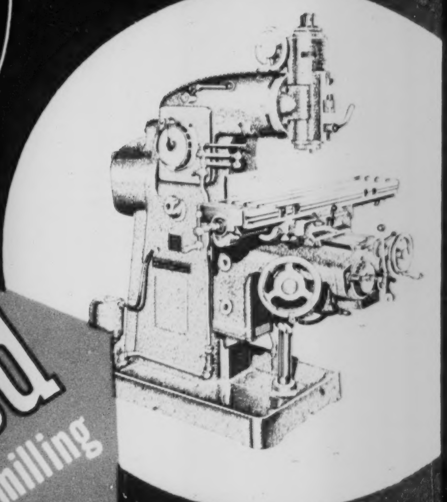
Send for new Bulletin 4206
which gives vital facts and figures

DE LAVAL *Mechanical Drive Turbines*

DE LAVAL STEAM TURBINE COMPANY
860 Nottingham Way, Trenton 2, New Jersey

OL205

BS

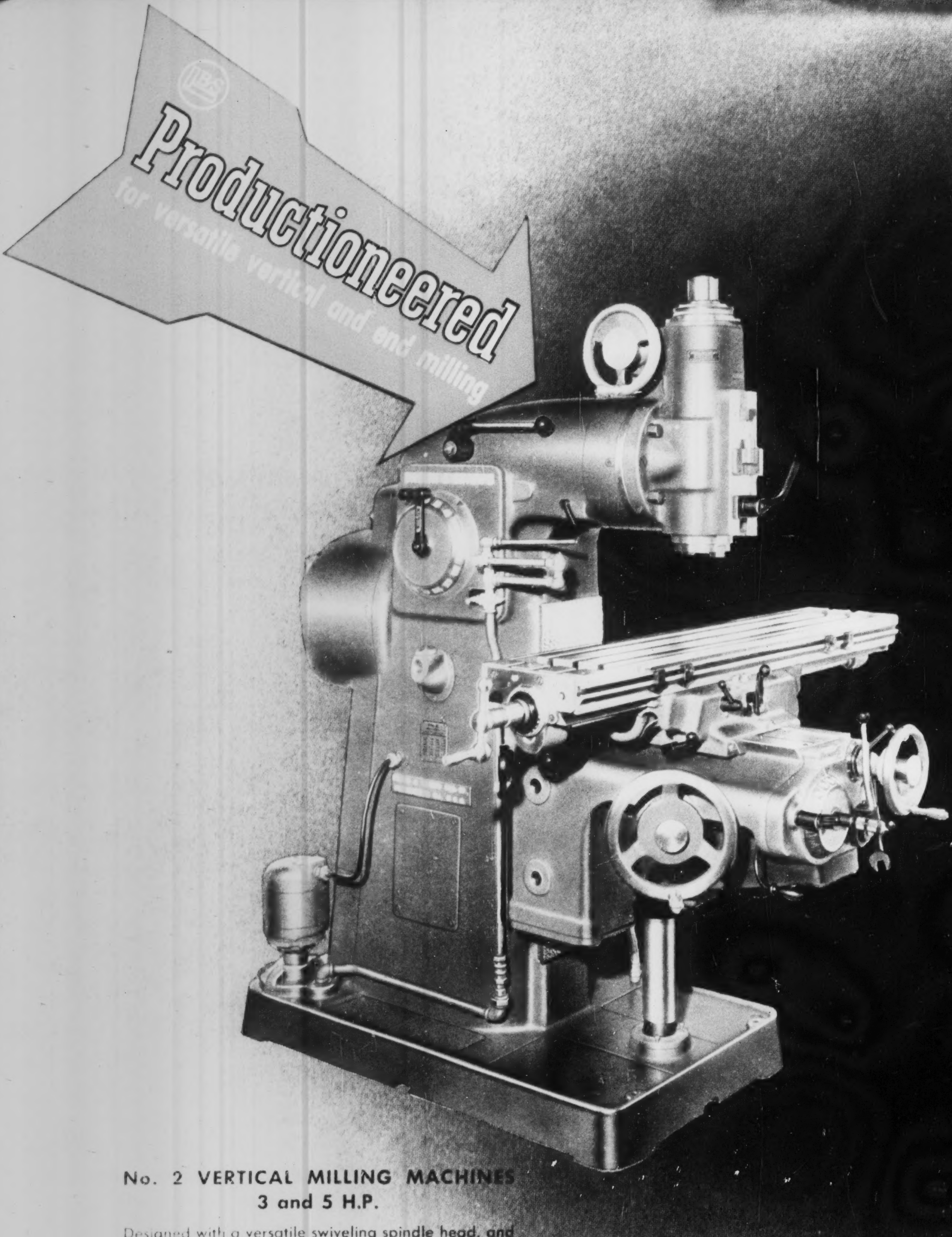


Productioneered

equipment for all-round production milling

Today especially — when sudden switchovers from civilian to military production are common — the characteristic flexibility of Brown & Sharpe Machines and Tools is invaluable to milling departments. These products are "Productioneered" for emergency as well as normal production . . . specifically engineered for high output with uniform accuracy on a wide variety of small-to-medium-size parts.

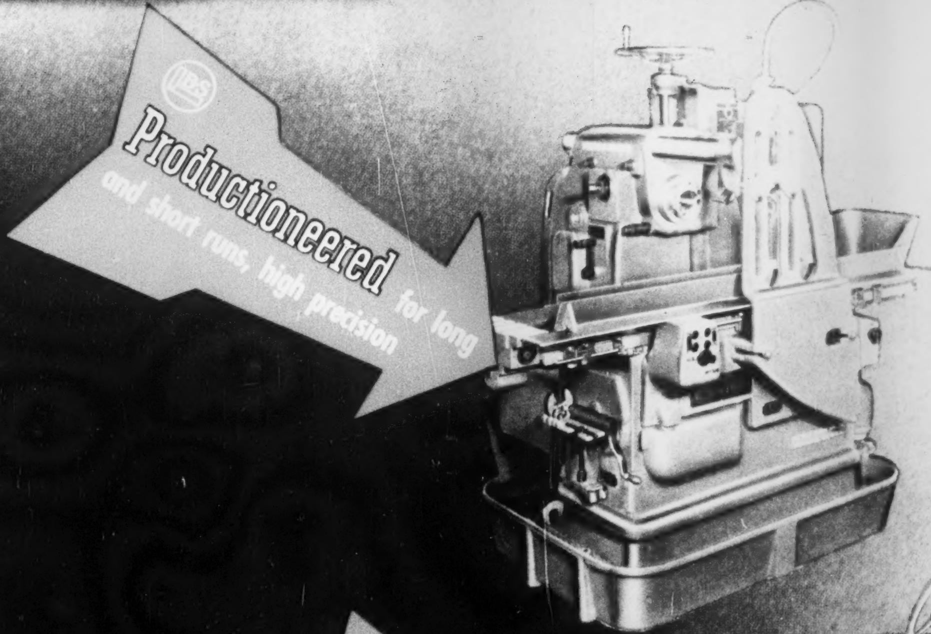
Brown & Sharpe


BS
Productioneered
for versatile vertical and end milling

No. 2 VERTICAL MILLING MACHINES
3 and 5 H.P.

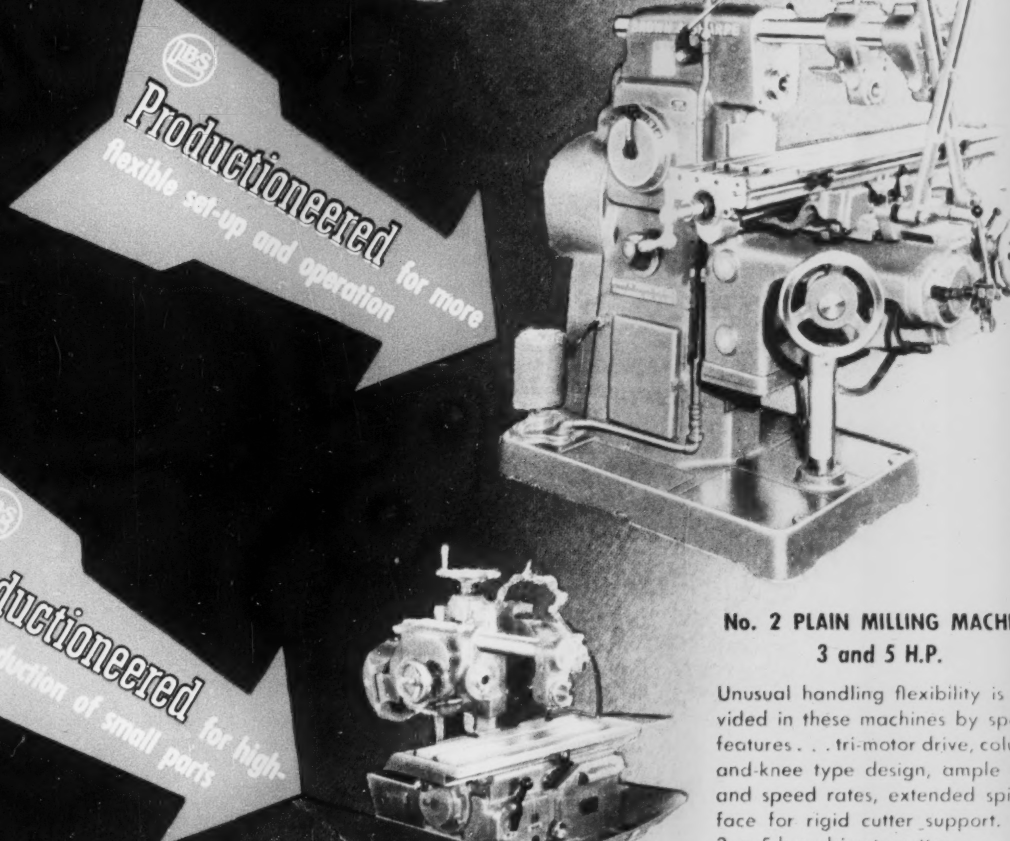
Designed with a versatile swiveling spindle head, and many of the flexible features of plain and universal machines. Choice of full 3 or 5 h.p. drive to cutters . . . speed ranges 50-1800 or 40-1530 R.P.M. Swiveling head, with hand or power feed, cuts costs on end and face milling, die- and mold-making.

Brown & Sharpe


IBS
Productioneered for long and short runs, high precision

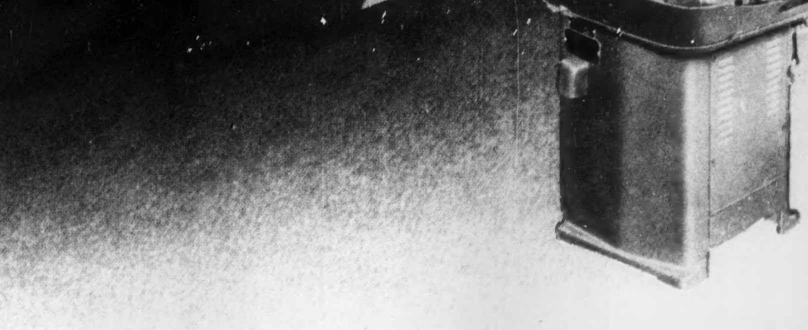
No. 12 PLAIN MILLING MACHINES
3 and 7½ H.P. Spindle Drive

Here are excellent electrically controlled manufacturing-type machines for mass-producing small-to-medium size parts, accurately, at low cost. Speeds: 25 to 1050 and 25 to 1790 R.P.M. The 7½ h.p. model handles many moderate-sized carbide milling jobs.


IBS
Productioneered for more flexible set-up and operation

No. 2 PLAIN MILLING MACHINES
3 and 5 H.P.

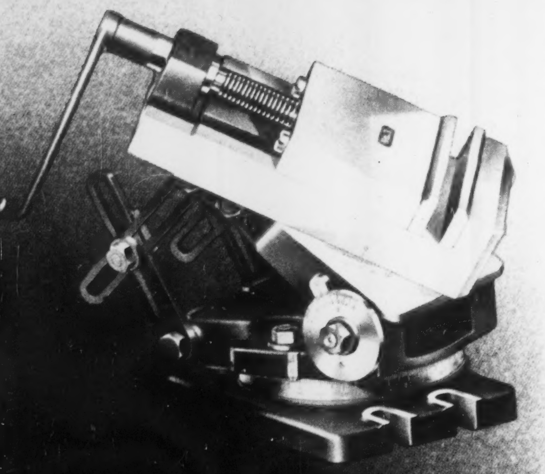
Unusual handling flexibility is provided in these machines by special features . . . tri-motor drive, column-and-knee type design, ample feed and speed rates, extended spindle face for rigid cutter support. Full 3 or 5 h.p. drive to cutters.


IBS
Productioneered for high-level production of small parts

No. 000 PLAIN MILLING MACHINE

Designed for highly efficient production of small parts in assemblies such as sewing machines, radios and firearms. Simple to set up, fast in operation, exceedingly accurate. Automatic operating cycle. Broad ranges of speeds and feeds.

B·S
Productioneered
to aid in efficient, accurate output

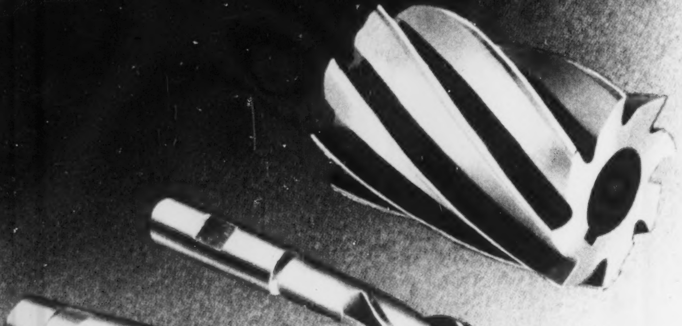


BROWN & SHARPE VISES

Provide easy, secure holding for milling, drilling and grinding. Wide range of styles and sizes: Toolmakers' (illustrated), has vise proper adjustable to any angle . . . Cam type, for fast handling of duplicate pieces . . . Swivel . . . Flanged . . . and Plain styles.

JOHANSSON GAGE BLOCKS

The surest way to maintain uniform precision throughout production is to inaugurate regular checking of your measurement standards in every department with accurate Johansson Gage Blocks. It will cut lost time and spoilage. 3 guaranteed accuracy standards: ± .000002", ± .000004" and ± .000008" per inch.



CUTTERS AND END MILLS

The clean-cutting, long-wearing qualities of these cutters help to maintain machine output at highest volume levels. The complete line of Brown & Sharpe Cutters includes outstandingly productive styles for every type of milling job.

WRITE FOR COMPLETE INFORMATION ON ANY OF THE BROWN & SHARPE PRODUCTS LISTED BELOW

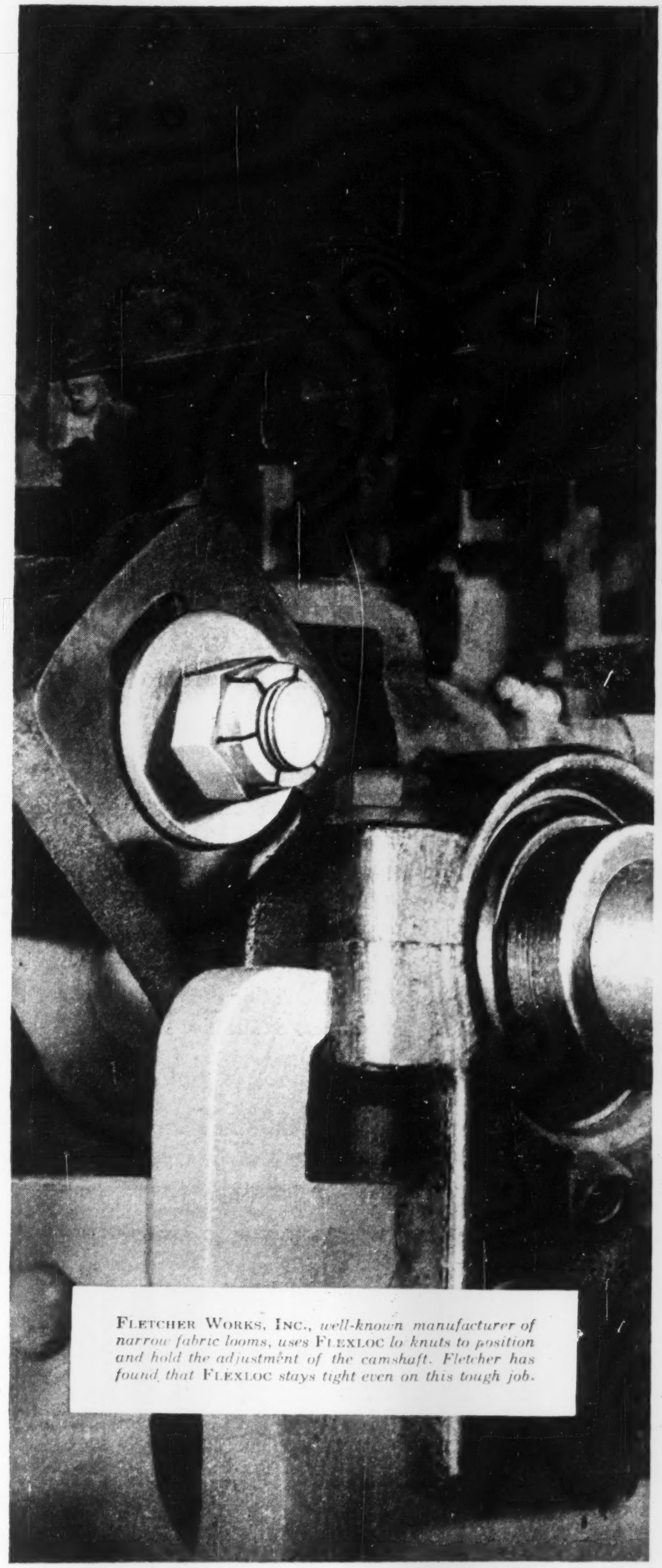
WE URGE BUYING THROUGH THE DISTRIBUTOR

Brown & Sharpe B·S

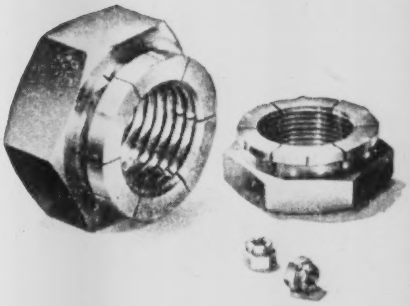
Milling Machines • Grinding Machines • Screw Machines • Cutters • Machine Tool Accessories
Machinists' Tools • Electronic Measuring Equipment • Johansson Gage Blocks • Permanent Magnet Chucks • Pumps

BROWN & SHARPE MFG. CO., PROVIDENCE 1, R. I., U.S.A.

PRINTED IN U.S.A.



Fletcher Works, Inc., well-known manufacturer of narrow fabric looms, uses Flexloc locknuts to position and hold the adjustment of the camshaft. Fletcher has found that Flexloc stays tight even on this tough job.



How FLEXLOC locknuts reduce maintenance

FLEXLOCS reduce maintenance by staying where you put them. Once they are installed, you can forget them. Service and inspection periods can be stretched safely from days to weeks.

And FLEXLOCS eliminate complicated, time-consuming methods of locking threaded fasteners. They offer faster, simpler application, and safer, more dependable locking than plain nuts and lockwashers, castellated nuts and cotter pins, or nuts and jam nuts.

Use FLEXLOCS wherever you use an ordinary nut. These one piece, all metal locknuts—with nothing to assemble, come apart, lose or forget—won't work loose regardless of the vibration encountered. Yet they can be easily removed and used over and over again. FLEXLOCS are stop and lock nuts too. They don't have to seat to lock, and they stay put anywhere on a threaded member as soon as the locking threads are fully engaged.

You can get FLEXLOCS in a wide range of sizes in any quantity. Stocks are carried by leading industrial distributors everywhere. Write for literature and samples. SPS, Jenkintown 33, Pa.

FLEXLOC®

LOCKNUT DIVISION

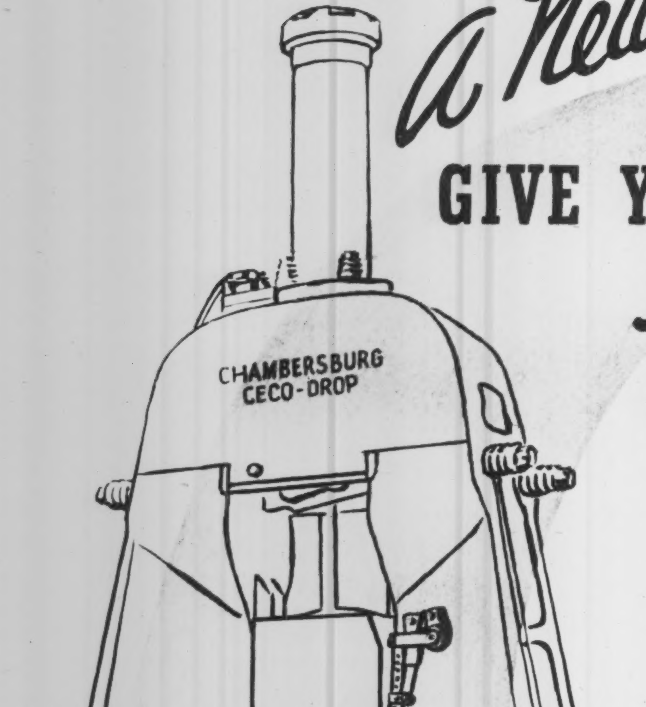
SPS

JENKINTOWN PENNSYLVANIA

Our Fiftieth Year: A START FOR THE FUTURE

GIVE YOUR BOARD DROP HAMMERS

A New lift!



GIVE YOUR OPERATORS

New life!

YOUR PRESENT ANVILS PLUS CECO-DROP UPPERWORKS

can mean quick modernization at a minimum cost and can put new life in your operators

Here's a good suggestion: You can install Ceco-Drop upperworks on your existing board drop hammer anvils. Thus at a considerable saving you will be in a position to meet and beat tomorrow's stiff competition. You will produce more accurate forgings at a lower cost through more continuous production. You will have the most modern forging hammers available. Your hammermen will end their shifts fresh and still full of pep.

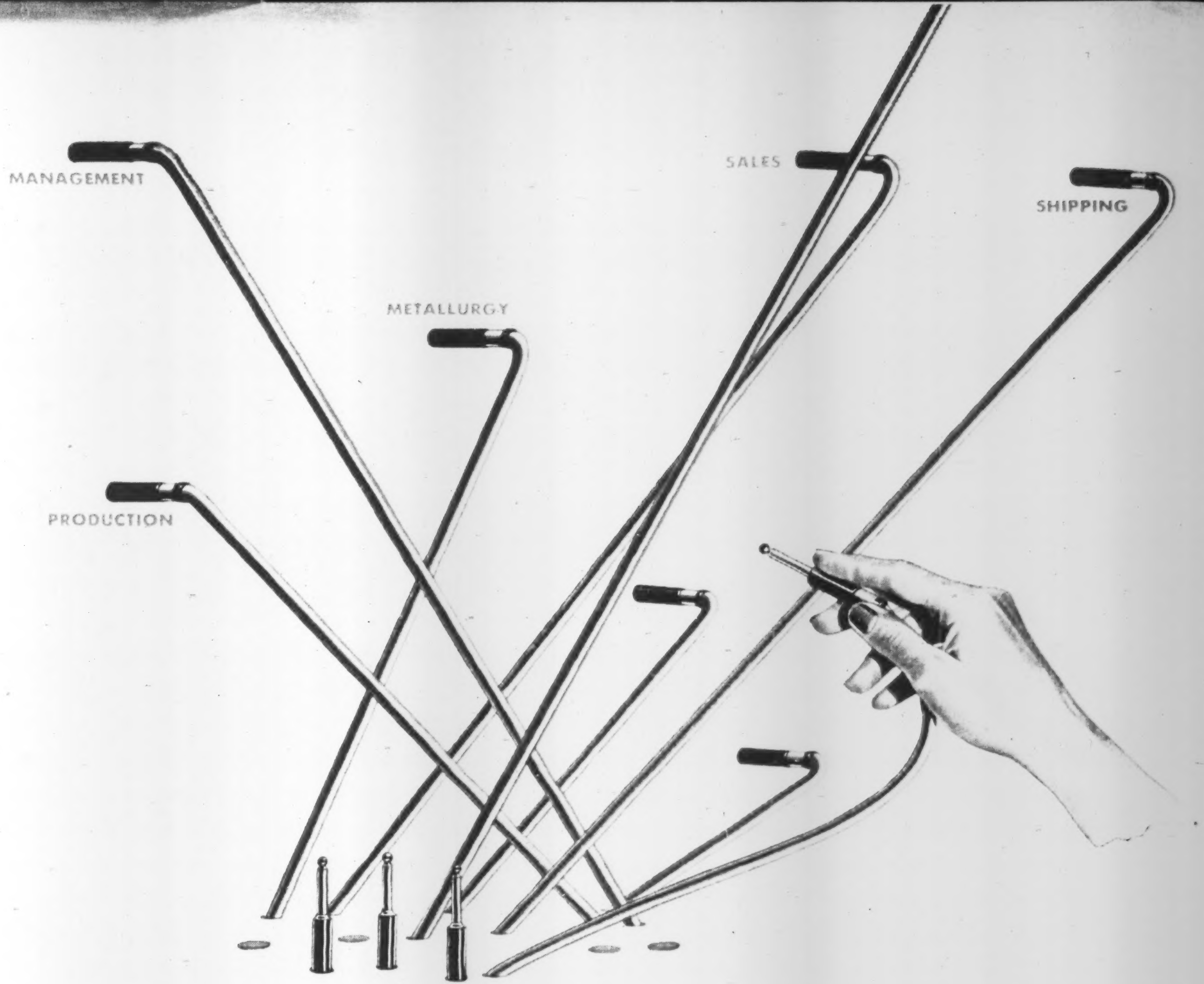
That's part of the Ceco-Drop story. The rest is in Bulletin 11-L-O a copy of which will be sent on request. Write today.

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

Builders of THE IMPACTER
"FORGING IN MID-AIR"



FACED WITH A STEEL PROBLEM ?

One moment please . . .

Your steel problem is well on its way toward being solved the moment the Weirton switchboard operator makes your connection. Whether it's sales, metallurgy, production, shipping, or any combination, you have a direct line to fast action.

Fully realizing the importance of its customers' problems, Weirton has coordinated and centralized the key men in all phases of operations, under one roof. These men with the answers can get together on short notice and give you prompt attention. This unique integration assures you of quick answers when you need them to maintain production rates and meet schedules.

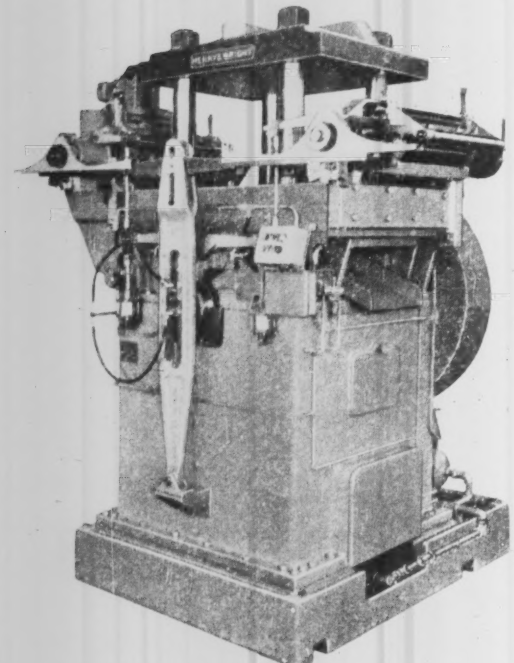
This method of operation was established for your benefit. When you are faced with a steel problem, pick up your phone and get all the answers . . . from Weirton.

WEIRTON
STEEL
COMPANY

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

A PROFIT WITH EVERY STROKE



Our customers say that. It figures. One Dieing Machine does the work of five to ten conventional stamping presses. One stroke—a complete part. One inspection. One trip for parts removal. Speed—you can pull out the throttle. Die life—longer for two reasons. (1) Stability, minimum vibration, extreme precision of tools alignment. (2) Dies take less of a beating; less metal needs to be removed for sharpening. Our men can give you the whole Dieing Machine story. If you want to cut costs, now's the time to talk to one of them—a note from you will have an H & W man on deck promptly.

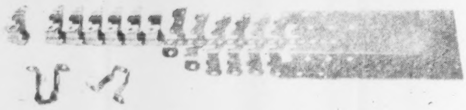
NEW CATALOG Up to the minute facts on Dieing Machines. Capacities now range from 25 tons to 2500 tons. Catalog gives specifications up to 400-ton machine. Write Henry & Wright, 441 Windsor St., Hartford, Connecticut.

HENRY & WRIGHT

DIVISION OF EMHART MFG. CO.

HARTFORD 1, CONNECTICUT

TYPICAL JOBS THAT SHOW A PROFIT AT EVERY STROKE



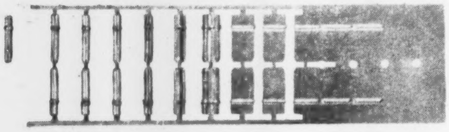
Automotive stamping produced complete per stroke from $\frac{5}{32}$″ thick by 13″ wide hot rolled steel in coils on 200-ton Dieing Machine, single gear type, equipped with progressive die. Speed approximately 45 strokes per minute.

Ball bearing retainer produced complete in 75-ton Dieing Machine operating at speed of 95 strokes per minute. Made from 4$\frac{3}{8}$″ wide by .034″ thick cold rolled steel.

Ferrule. One completed piece produced per stroke in 50-ton Dieing Machine operating at speed of 90 strokes per minute. Made from $\frac{9}{16}$″ diameter by $\frac{7}{8}$″ long by .030″ thick cold rolled steel.

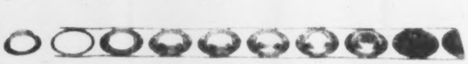
C-Clamp Frame. Both halves produced complete in 150-ton Dieing Machine operating at speed of 65 strokes per minute. Material cold rolled steel .086″ by 4$\frac{5}{8}$″ wide.

Support bracket produced complete one per stroke in 150-ton Dieing Machine operating at speed of 60 strokes per minute. Made from .062″ thick by 7$\frac{1}{4}$″ wide cold rolled steel.



Radio tube prong produced complete in 25-ton Dieing Machine at rate of 450 pieces per minute. Made from brass .012″ by 1$\frac{7}{16}$″ wide.

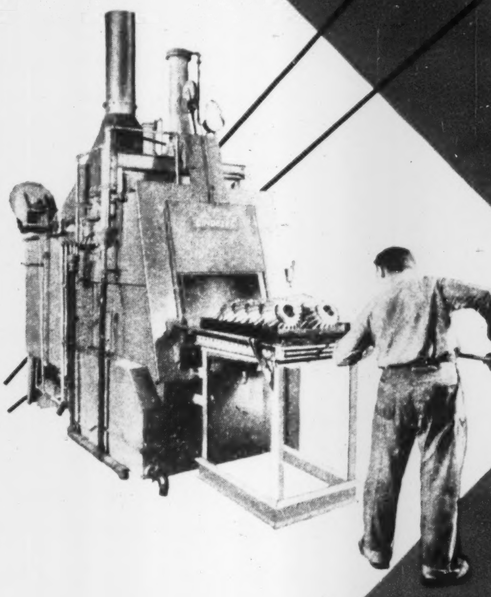
Bathroom fixture produced in 60-ton Dieing Machine operating at speed of 100 strokes per minute. Made from .032″ thick by 1$\frac{3}{4}$″ wide cold rolled steel.



Hardware item. One completed piece produced per stroke in 100-ton Dieing Machine operating at speed of 75 strokes per minute. Made from 3″ wide by .040″ thick cold rolled steel.

5 FURNACES IN ONE

the LINDBERG Carbonitriding Furnace



Yes, it's many furnaces in one! It's designed not only for carbonitriding . . but also for hardening, carburizing and carbon restoration. It's self contained . . it's easy to maintain!

10 reasons why Lindberg Carbonitriding Furnaces are better:

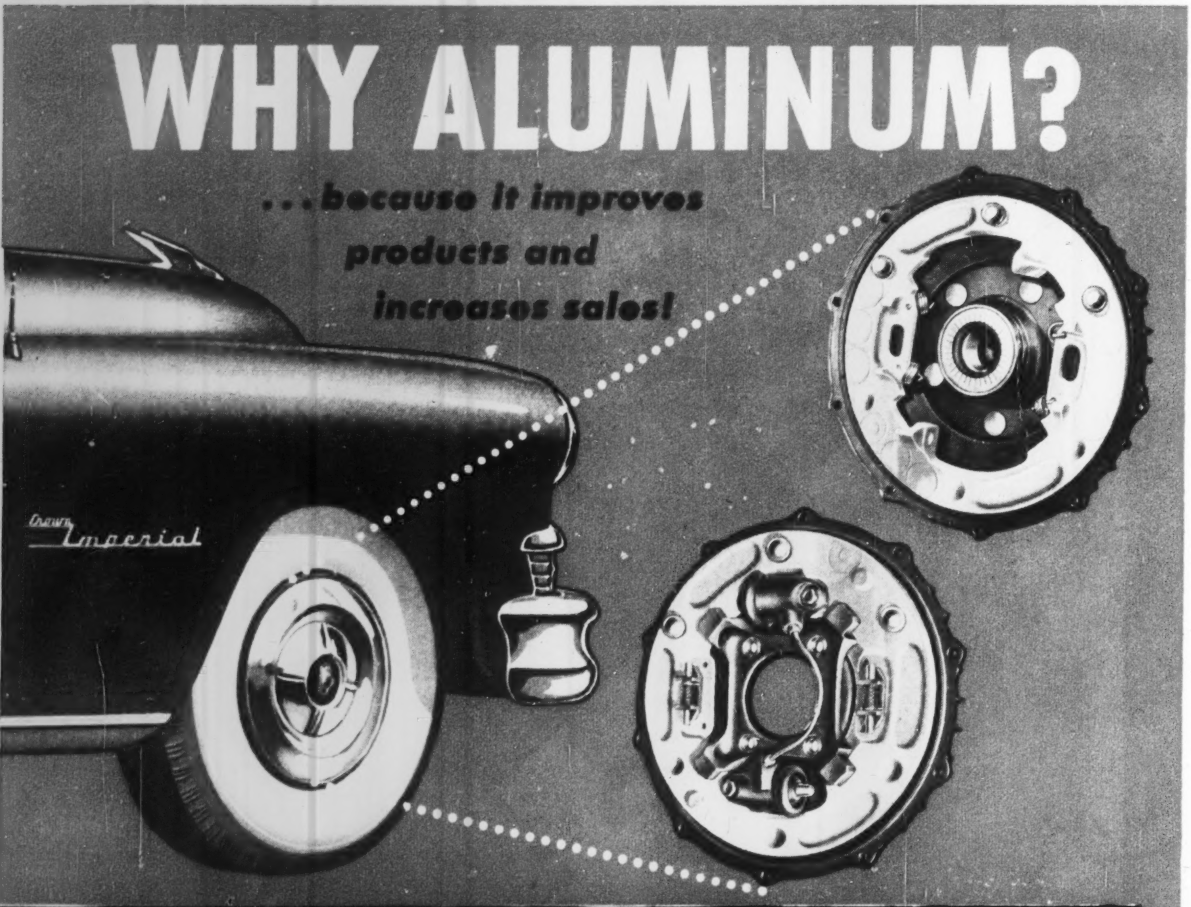
1. Heating is by new type, gas-fired, vertical radiant tubes. They weigh only 29 pounds each . . can be changed in two minutes. Just lift out the old one, and lower the new one in its place.
2. Vertical radiant tubes last longer . . often two or three times as long.
3. Quench tank is built-in . . no costly excavation or piping necessary. Distortion is minimized because quenching takes place within furnace structure, and heated work is never exposed to outside air.
4. Quench tank has fin type oil cooler . . maintains oil at proper temperature for quenching.
5. Specially designed purge chamber purges work loads before they enter heating chamber.
6. Special check-light system tells you where charge is at any given time.
7. Control of heating and quenching cycle is automatic. Uniform case depth is assured because each charge remains at heat same length of time.
8. Depending on your production requirements, Lindberg Carbonitriding Furnaces are made for automatic, semi-automatic, or manual charging.
9. You're not experimenting with Lindberg Carbonitriding Furnaces. They've been tested . . under three years of rough operating conditions.
10. The famous Lindberg "Hyen" generators which supply atmosphere for Lindberg Carbonitriding Furnaces are instantly adjustable for many different types of atmospheres.

For full details, ask for bulletin #241.

LINDBERG FURNACES

Lindberg Engineering Company • 2441 West Hubbard Street • Chicago 21, Illinois

WHY ALUMINUM?



CASE HISTORY: Chrysler Self-Energizing Disc Brake*

**Standard Equipment on Crown Imperial Models*

Two, lightweight, cast aluminum pressure plates are used in the advanced design Chrysler Disc Brake to quickly dissipate heat generated in braking. This is one example of how aluminum's superior heat transfer can be used to advantage . . . in this case to improve braking efficiency and to prolong brake life.

Other advantages that are proving equally beneficial to manufacturers and operators of cars and trucks include aluminum's low cost, light weight with strength, ease of fabrication, electrical conductivity and corrosion resistance. These factors have influenced the widespread use of aluminum for pistons, transmission and torque converter parts, carburetor bodies, generator and starter parts, battery trays, window frames, trim and a host of other parts and accessories. For more information send for the free folder, "Here's What The Automotive Industry Is Doing With Aluminum."

In almost every industry a change to aluminum has provided manufacturing economies, improved designs and, at the same time, increased sales appeal. Ask Reynolds Aluminum Specialists to help you apply aluminum's advantages to your products and production.

Call the nearby Reynolds office listed under "Aluminum" in your classified telephone directory. Also write for complete index of design and fabrication literature. Reynolds Metals Co., 2520 S. Third Street, Louisville 1, Kentucky.

"Mister Peepers" returns September 13th on NBC-TV. Consult local listing for time and station.

REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND

COLD ROLL FORMING for Highest Strength-Weight Ratio

The trend in product design is strongly toward elimination of useless weight, not only in automotive and other transport equipment but also in home, office and business appliances, and other products.

Plain structural members are constantly being replaced by designed shapes made by cold-roll-forming, because of their higher strength-weight ratio and because they can be made to combine the functional with the decorative.

There are, in fact, few shapes which can not be made lighter or stronger, or both, by continuous cold-roll-forming from coiled strip than by any other method. The material saving through weight reduction often exceeds the entire conversion cost.

In making products for which the demand is growing, the installation of a Yoder cold-roll-forming machine also answers the need for higher production at greatly reduced cost, especially when other operations can be tied in with it at little or no extra cost.

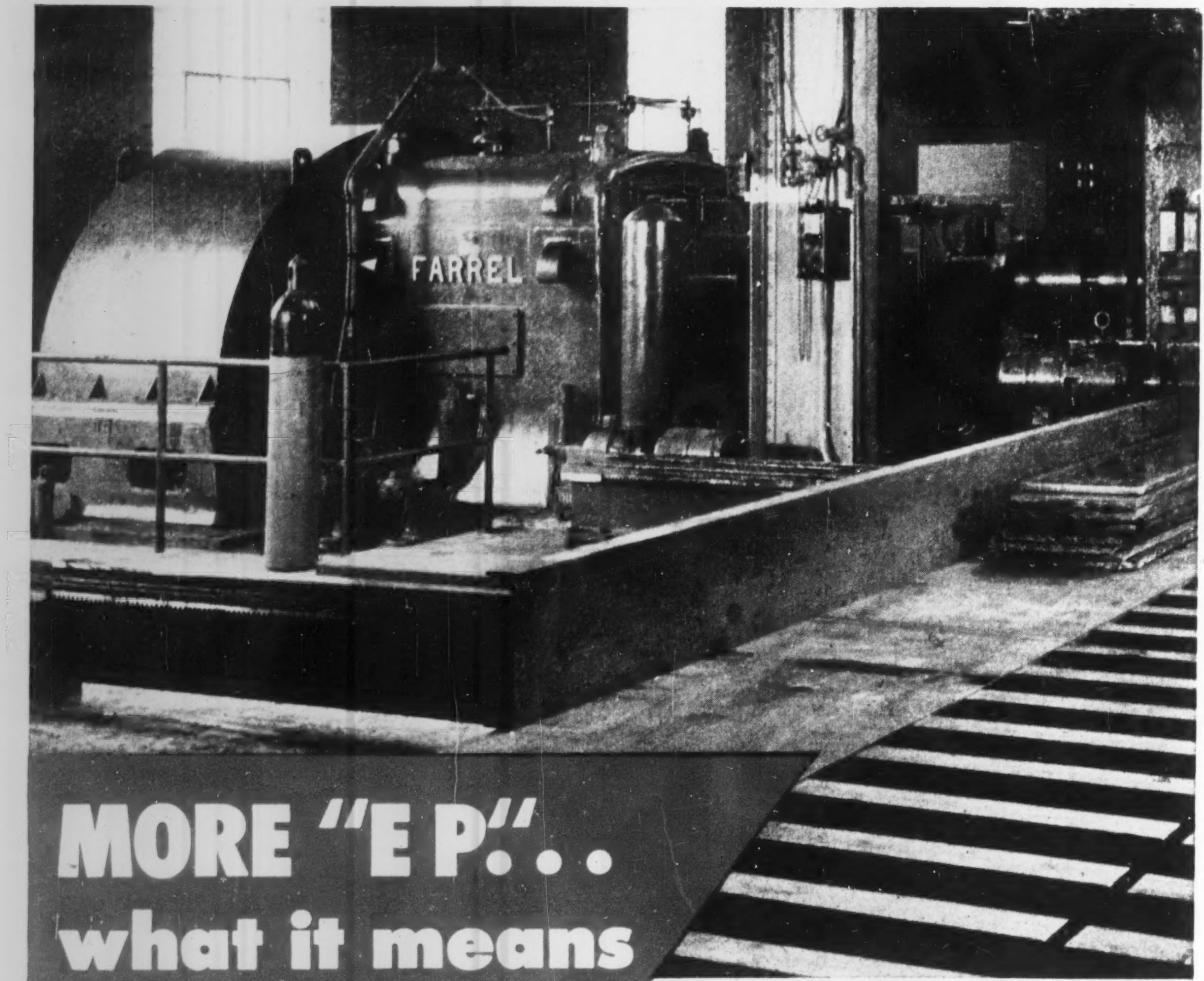
Literature, recommendations and estimates, without cost or obligation.

THE YODER COMPANY
5502 Walworth Ave. • Cleveland 2, Ohio

Complete Production Lines

★ COLD-ROLL-FORMING and auxiliary machinery
★ GANG SLITTING LINES for Coils and Sheets
★ PIPE and TUBE MILLS–cold forming and welding

ENGINEERING YODER MANUFACTURING



MORE "E P."... what it means to you . . .

A lubricant for enclosed reduction gears should have plenty of "EP"—Extreme Pressure characteristics — to protect against wear under the heavy loads imposed in steel mill service. *Texaco Meropa Lubricant*—always famous for all-around performance — now has increased "EP."

The new and improved *Texaco Meropa Lubricant* not only protects better, but maintains higher "EP" longer. It does not separate in service, storage or centrifuging; and is not affected by high operating temperatures or moisture. It does not thicken, does not foam, and is non-corrosive to bearings. *Texaco Meropa Lubricant* assures longer gear and bearing life, lower maintenance costs.

For oil film bearings on roll necks, use *Texaco Regal Oil*. It's turbine-quality, with outstanding resistance to oxidation and sludging.

Call in a Texaco Lubrication Engineer for practical suggestions on raising efficiency and reducing costs throughout your mill. Just contact the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO
REG. T. M.

TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

STEEL
September 7, 1953

Metalworking Outlook

Salaries Climb 4 Per Cent

White collar salaries have gone up about 4 per cent this year, approximately the same as for production workers. The majority of employers, when they grant a cents-per-hour increase in the shop, translate the raise to a percentage figure and add it to the income of other employees, says Associated Industries of Cleveland. A STEEL check indicates that white collar boosts to match hourly wage hikes usually go to salaried employees earning up to $7500 a year.

The Heat's On

The heat wave last week did things to the nation's power consumption. Total distribution of current by the electric utility industry reached a new high of 8.5 billion kilowatt-hours in the week ended Aug. 29 and will probably keep at the peak for a while. Edison Electric Institute attributes the high consumption largely to air conditioning (see p. 62).

End of Input-Output

Deputy Secretary of Defense Roger Kyes has ordered the controversial input-output program killed. Studies on it will grind to a halt in November after four years of time and $3.6 million have been spent for the project. It involves the technique of economic analysis first developed by Wassily Leontieff of Harvard. It is designed to give more accurate quantitative information on one industry's supply-demand relations to all other industries. Some segments of industry opposed it as "push-button planning." Official reason for dropping it: Not enough direct connection with the defense effort.

Nickel Decision Delayed

The final decision on nickel decontrol won't come for several weeks. Defense Mobilizer Arthur Flemming has asked for more factual information about the situation before he will decide. Strong opposition to decontrol comes from the Defense department which believes allocation and end-use regulations necessary for defense and continued stockpiling.

Factor With Foundries

Although the number of foundries has increased (p. 72), there's a growing trend toward centralization of foundry work in some areas. That's being brought about by a growing list of foundries which are closing due to labor troubles or lack of business. For example, in southern Ohio and northern Kentucky recent shutdowns include the Carthage foundry of Lunkenheimer Co., Cincinnati; Furnace Foundry Co., Jackson, O.; Harris-Sey-

Metalworking Outlook

bold Co.'s foundry at Dayton; the Williamsburg, O., foundry of U.S. Electrical Tool Division of Emerson Electric Mfg. Co.; and Drummond Mfg. Co., Louisville.

Fast Handling

Watch for faster handling of inventories from now on as supplies of materials, components and finished goods become more plentiful. Steel fabricators, for example, are returning to their prewar practice of unloading sheet and hauling it directly to presses rather than to storage. The trend should gain momentum as buyers realize they aren't taking a chance of getting caught short in plentiful items.

Fruit for Metalworking?

If you plan or have investments abroad, watch the United Fruit Co. case in Guatemala. That nation expropriated 234,000 acres of the fruit company's land last March and offered to pay for it in 3 per cent "agrarian" 25-year bonds. The State department is backing United Fruit and declares that the deal offered by Guatemala is "unjust." State department officials, anxious to encourage private investment abroad, promise to push the case.

Industrial Designers Move In

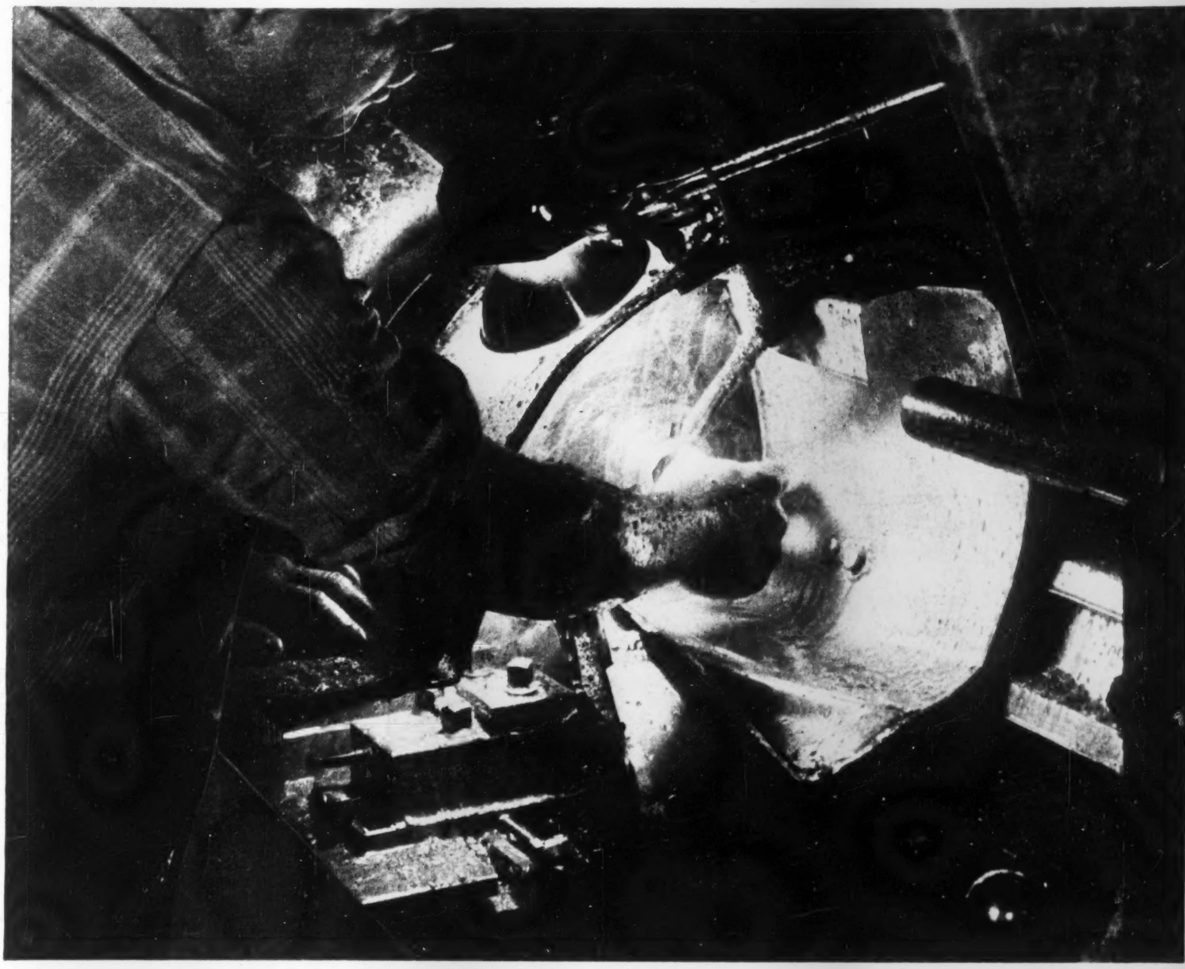
Over $2.5 billion worth of newly designed consumer and industrial products—from pencil sharpeners to automobiles—will be sold in the U.S. within the next 12 months based on new and improved products designed by members of the Society of Industrial Designers. SID represents more than 135 of the nation's leading industrial designers, heads of design departments for companies or independent designers working for many firms. Gross incomes of industrial designers rose 19 per cent over the previous year, and employment in the field is up 19 per cent over a year ago.

Straws in the Wind

Because of the Russian H-bomb tests, watch for a stronger program to induce industry toward greater plant dispersal, possibly through the use of certificates of necessity . . . General Motors Corp.'s Livonia fire has industrial architects and contractors studying the possibility of bulkheading plants just as in ships to confine fires to one section of the facility . . . With STEEL's steelmaking scrap composite falling for the third week in a row, some steelmakers are considering using a richer mix of scrap in their charges . . . Packard Motor Car Co. will lay off about 6500 workers for two weeks because of a delay in tooling for its 1954 models . . . Pennsylvania steelmakers are studying the effect the new 1 per cent state sales tax will have on their activities.

This Week in Metalworking

The economy is regaining control of its inventories (p. 61) . . . Toy makers predict banner $180-million production year (p. 63) . . . New mobilization plans are in the works for components, military equipment redesign and fast write-offs (p. 64) . . . Ford Motor Co. plans another engine plant for the Cleveland area (p. 66) . . . The Republicans will soon have a 3-2 majority on the National Labor Relations Board (p. 68) . . . Mexico is developing its own steel industry (p. 71).



Workers no longer breathe oil mist.

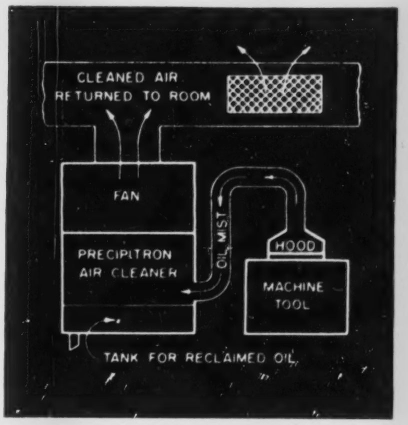
ELECTRONIC TRAP

SNARES OIL MIST, UPS EFFICIENCY

Whirling chucking machines throw up clouds of vaporized oil coolant. At Scovill Manufacturing Co., this formerly restricted visibility, reduced operating efficiency, caused hazardous working conditions. Oil mist on wiring threatened fire, too.

But Westinghouse PRECIPITRON* Oil Mist Control wiped out this problem. This unique device snares the oil out of the air by electronic attraction; allows only pure air to pass. It provides these benefits: 1) salvaged coolant oil; 2) improved working conditions; 3) safety from slippery floors and tools.

Westinghouse will *put air to work* to save you money, too. Our full line of air cleaning, air conditioning and air handling equipment solves many production problems. Call your local Westinghouse-Sturtevant office, or write Westinghouse Electric Corp., Sturtevant Division, Hyde Park, Boston 36, Massachusetts.



Collection hoods catch oil mist at its source. Quiet, efficient Westinghouse fan units draw coolant-laden air through PRECIPITRON air cleaners. PRECIPITRON traps smoke, fume and fog particles. It costs only pennies per week to operate, has no moving parts to wear out or replace.

WESTINGHOUSE AIR HANDLING

YOU CAN BE SURE... IF IT'S **Westinghouse**

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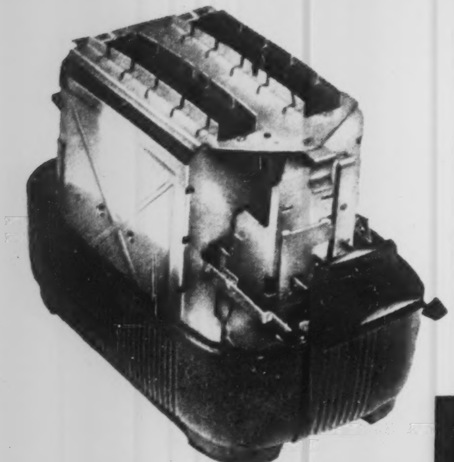
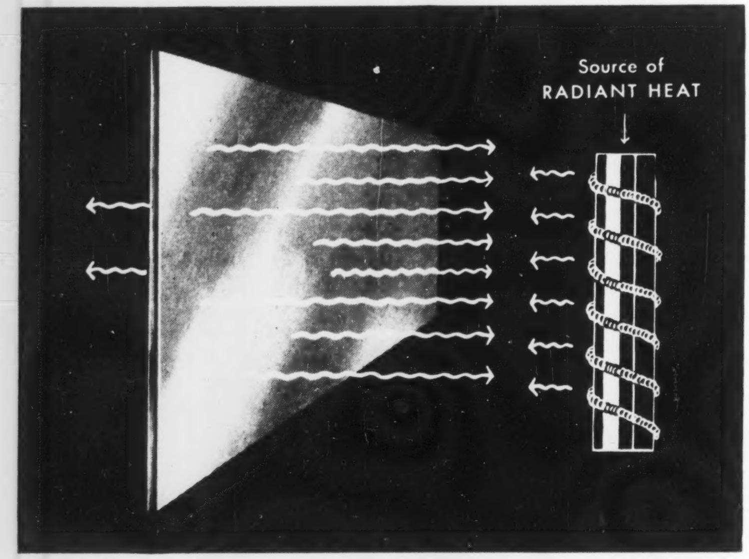


This **ALUMINIZED** Steel interior of a toaster keeps the inside hot, the outside cool.

This Steel STOPS Radiant Heat



Armco ALUMINIZED* Steel is an effective heat *barrier* because it is an excellent heat *reflector*. Up to about 900 F, it reflects more than 80 per cent of the radiant heat thrown against it. Less than 20 per cent goes through this hot-dip aluminum-coated steel. That's why it raises the heating efficiency of infra-red ovens, ranges and other gas and electric appliances. It *contains* rather than dissipates the radiant heat.

ENDURES SCALING TEMPERATURES

Besides serving as a reflector of heat, Armco ALUMINIZED Steel is widely used where high temperatures would cause other low-carbon steels to fail through progressive scaling. ALUMINIZED will withstand temperatures up to approximately 900 F without discoloration, and up to about 1250 F without destructive scaling.

For this reason a prominent independent research laboratory has rated Armco ALUMINIZED Steel next to stainless steel for endurance in combustion chambers and burner rings of gas-fired furnaces.

A FLAT-ROLLED PRODUCT

Armco ALUMINIZED Steel is made in sheets and coils 12 through 28 gage in thickness and up to 36 and 48 inches in width depending on gage. For more information on this versatile material, write for the booklet, "Armco ALUMINIZED Steel".

For other Armco products see our catalog in Sweet's Product Design File.

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AS THE EDITOR VIEWS THE NEWS **STEEL**

September 7, 1953

The Rightness of Effort

In 1900 about 2.4 per cent of the labor force of 29 million in the United States was unionized. Today 25.1 per cent of the 67.5 million persons constituting the labor force are members of unions. The rapid growth of the union movement, particularly in the past two decades, has given a handful of top union leaders an unprecedentedly powerful voice in national affairs.

On this Labor Day of 1953 it may be well for us who are concerned with the future success of the metalworking industry to give serious thought to impending problems of labor relations. It goes almost without saying that the present strength of the unions is such that management must put forth its very best talent to deal with union negotiators. It is also apparent, or should be, that there is room for great improvement in management's handling of many phases of labor relations.

Undoubtedly such improvement will be forthcoming. Industrial executives have a faculty of meeting special problems successfully once they discover that the problems are important. In time they will master the technique of negotiating wage rates, fringe benefits, working conditions, etc., with union representatives effectively and satisfactorily.

But there is another aspect of labor relations in which everybody concerned must be doubly careful. It is the insidious manner in which unions attempt to encroach upon the prerogatives of management. Almost invariably it leads to the sabotage of productivity.

In an article entitled "The Riddle of Prosperity," *The Economist*, of London, says: "The real secret of American productivity is that American society is imbued through and through with the desirability, the rightness, the morality of production. In Britain, if any moral feeling at all survives about economic matters, it is usually a vague suspicion that economic success is reprehensible and unworthy. How shall we set about restoring some belief in the rightness of effort, the morality of success?"

The union movement is older and more strongly entrenched in England than in the United States. Let's start right now to make sure that leaders of our unions never will question the "rightness of effort and the morality of success."

E. L. Shaner

EDITOR-IN-CHIEF

DAY LABORERS SCARCE: In connection with the article "A Job for Management—Better Labor Relations" (pp. 101-108), a hasty reading notes that the author places emphasis upon a new trend that has started this year. It is that greater proportionate increases have been granted to skilled workers. "Indicative of that," he writes, "is the General Electric Co. wage settlement which ranged from 3½ to 15½ cents, depending upon the classification of skill. Until recently unions have held out for flat across-the-board raises regardless of workers' skills."

How true, and how unfortunate! Apparently the ordinary pick and shovel day laborer has almost been priced out of his job. A month ago a neighbor went to a contractor and sought his services on a fairly simple water line and pump project costing about $2000. The contractor looked over the job. He said the contour of the land was so rough that he couldn't put a mechanical ditcher on the job. He said it was practically impossible to get anybody to dig a ditch by hand.

Finally, the job is being licked in this way: Two common laborers are being loaned from another job on Saturdays and Sundays at time a half and double time and in a month or two when they have finished their hand labor, mechanical equipment and skilled laborers can come in and finish the job.

* * *

NO ITINERANT LABOR: Managers in almost every line of business know that it is difficult to find reliable persons to fill even the simplest kind of jobs. One wonders how much of this difficulty arises from the red tape and formality that is associated with the hiring of an employee under conditions existing today.

There was a time a few decades ago when there were itinerant workers who seemed to know almost by instinct where and when to find work. Persons of this type worked a day or a week in one spot and then moved along to other jobs. Sometimes they didn't even give their names and were paid in cash at the end of each day. Now we have gone to the other extreme. Today the cost and complications of putting a person on a payroll are formidable. A more flexible system might help.

* * *

GAINS 88 FOUNDRIES: A biennial census of the foundry industry conducted by *Foundry* shows interesting changes in the number and distribution of foundries in the United States and Canada during the past two years. Today there are 5387 foundries in the United States (p. 72) compared with 5299 in 1951. In Canada there are 551 compared with 568 two years ago.

In the United States there are more steel and nonferrous foundries in 1953 than in 1951, but there are fewer gray iron and malleable shops. In 1953 there are 2602 aluminum foundries and 2591 gray iron foundries—the first time the number of aluminum shops has exceeded that of gray iron shops. Sharpest gain in ferrous casting facilities was an increase of 30 steel foundries, 27 in the United States and three in Canada.

California led all other states in the increase in the number of foundries. It has 481 today compared with 421 in 1951—a gain of 60.

* * *

CAN WE LICK WEATHER? In the late days of August and the early days of September, temperatures in most of the industrial areas of the country soared far above normal levels. In some sections the thermometer registered temperatures higher than anything previously registered there.

In spite of this exceptionally hot weather, industry has managed to go along almost as usual. It seems as if there have been fewer shutdowns and interruptions than in previous hot spells of lesser intensity. Of course, we have more fans, air conditioners, etc., than heretofore. Their use is multiplying (p. 62). Possibly in time they will help to make hot weather a minor irritant.

* * *

EGGS IN ONE BASKET: Following the fire which destroyed the Livonia plant of General Motors Corp. there has been considerable discussion in government and industrial circles as to the advantages or disadvantages of concentrating a large volume of manufacturing activity in one vulnerable spot. One government spokesman cited the GM fire as an example of "the dangers that may be encountered from undue concentration of specialized manufacturing operations in one spot." (p. 64)

Of course he was thinking of the problem from the standpoint of defense. Industrial executives should be concerned with it also from the standpoint of uninterrupted peacetime operations. Probably they will conclude that it is unwise to have too many eggs in one basket in war or in peace.

Watch for this new trademark . . .

- A new company is formed to serve the metal-working industries of America.
- Mannesmann-Meer Engineering and Construction Company now offers complete engineering, manufacturing and servicing of special mill machinery for the steel, aluminum, copper, brass and other non-ferrous industries.
- It draws upon the unmatched operating knowledge of Germany's world-famous Mannesmann Works, the originator of the modern seamless tube mill process, and the broad technical resources of the Meer Company, manufacturers of heavy machinery since 1872.
- It can supply a complete line of pipe and tube mill equipment, mechanical extrusion presses for steel and non-ferrous tubing and special shapes, hydraulic equipment, cold straightening machines, and other special machinery.

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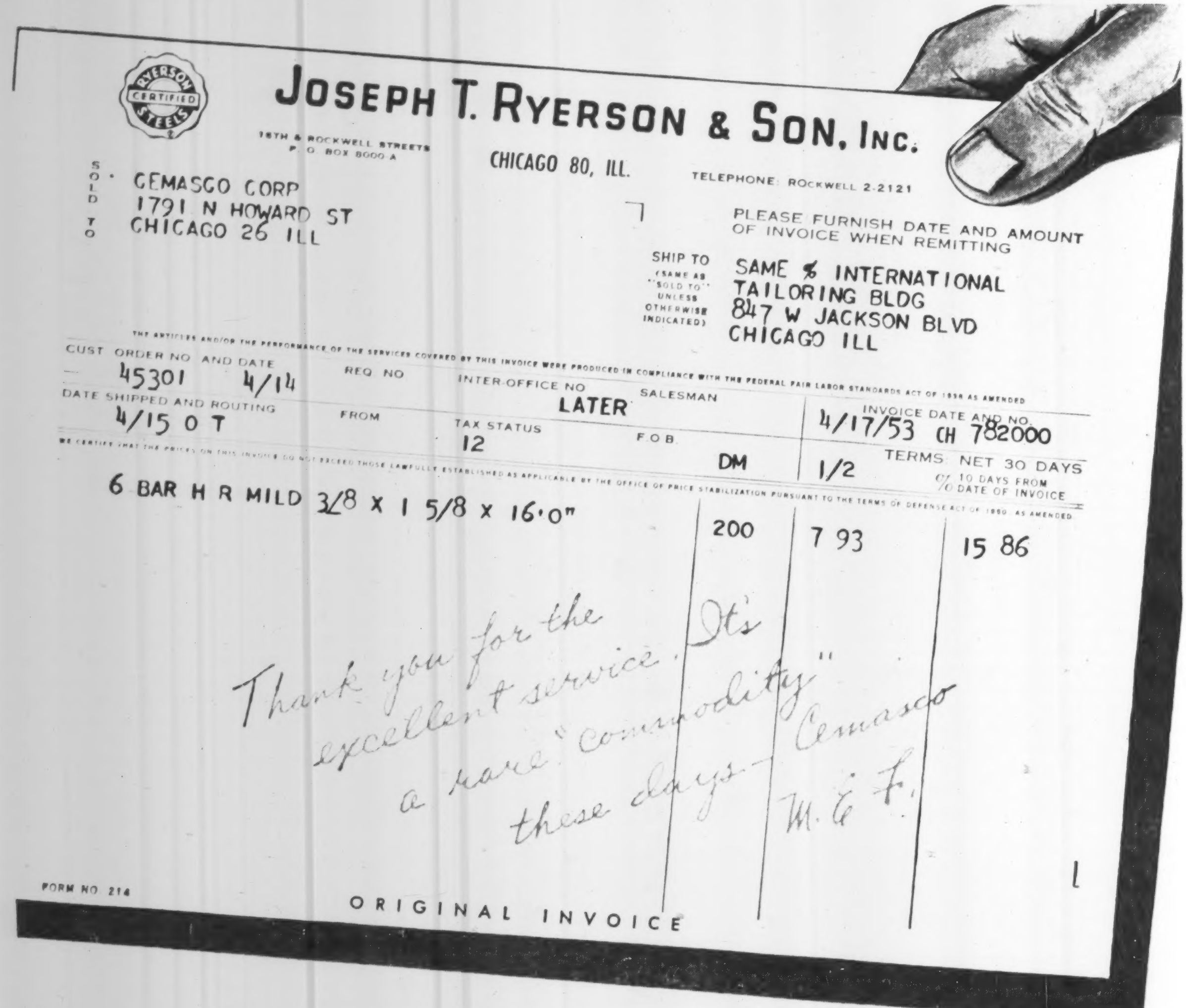

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Consumer Goods Inventories

Wide World

Watched Like a Hawk, They Grow Slowly

CONSUMER durable goods inventories are returning to the prewar balance for the first time in over ten years.

Growing voluntarily are inventories of consumer durables at the manufacturers' level. Distributors' stocks are building up, involuntarily in some cases since a distributor must take a fair share of manufacturers' output or chance losing his franchise. Retail dealers, except for auto dealers who are obliged to act as distributors in the auto trade, are cutting inventories to bare minimums all along the line.

Adding It Up—What it adds up to is a return to prewar distribution patterns as business once again assumes control of its future. While inventories are growing, they're being watched closely. There'll be no runaways this year.

The cautious tone in inventory build-up results from uncertainty about second-half business.

Rising Totals—Yet, sales in the first half gave little sign of an approaching slump. Gas stove unit shipments by manufacturers were up 10 per cent in the first six months of 1953 over the same period in 1952; standard-size household washer sales were up 28 per cent for the same period. Refrigerator unit sales were up about 30 per cent for the five months ending in May, 1953, over the comparable five months in 1952.

Shaky confidence springs mostly from a modest downturn in sales toward the end of the second quarter, 1953, following a bullish first quarter. No one wants to be caught napping with a burdensome inventory the retail dealer least of all.

WHERE INVENTORIES STAND TODAY

Automobiles: Inventories stood at postwar high of 13.2 units per dealer on Aug. 1 compared with 3.9 a year ago. That's about 30 days' supply; normal by prewar standards.

Gas Ranges: Inventories grew from 79,000 in January to 116,000 in May among manufacturers doing 65 per cent of the total volume; also considered about normal.

Electric Refrigerators: Manufacturers have from 3 to 4 weeks' finished inventory; slightly higher than last year at this time.

Automatic Washers: Manufacturers' inventories tend toward lower end of 30 to 45-day normal supply.

Back to Normal—Smart dealers say their low inventories leave them free to take advantage of any buying spurts which may develop. There's also a growing feeling among dealers that they've been carrying the manufacturers' and distributors' inventories at the dealers' expense. "Let the wholesale house carry the stock," says one Boston dealer. "They always used to." One gas stove manufacturer, in an effort to offset this trend, has offered dealers advance information on price raises and gimmick inducements. Thus far, such efforts have been successful in keeping 1953 models flowing onto dealers' floors.

Manufacturers are trying to get into a favorable forward inventory position, too. That means inventories must be large and broad enough to capitalize on present sales which accounts for much of the fattening in manufacturers' inventories. At the same time, stocks of finished goods must not be so large the manufacturer cannot get ready for new models or to start production of a new glamour-line appliance.

Keep Inventory Up—The automobile inventory picture reverses one aspect of conditions among other consumer durables. Most auto inventories are in the dealers' hands instead of in the manufacturers' or distributors'. Automakers expect to continue making enough cars to sustain present inventory levels (see box, p. 61) until perhaps the end of September. Then, dealers will be given a chance to clean out inventories of 1953 cars in preparation for 1954 models. Here again, the pre-World War II auto production pattern is beginning to appear.

Thus the weight of consumer durable inventories is shifting, but nowhere is it top-heavy: With business regaining control of distribution for the first time since World War II, those inventories are returning to something very much like the prewar balance.

Radio-TV Dealers Top 105,000

More than 105,000 dealers now sell radio and television sets, compared with 95,400 in August, 1952.

A survey by Radio-Electronics-Television Manufacturers Association shows that the greatest number of dealers are in towns of less than 10,000 population.

Car Sales by Factory Near Peak

When 599,077 passenger cars were purchased from U. S. factories in July, plant sales rolled up to the highest peak since March, 1951, during which month 617,399 units changed hands.

Previous high for this year was 596,633 cars of the pleasure type, set in April, according to the Automobile Manufacturers Association.

With factory sales of motor trucks climbing to 105,622 units in July, compared with 74,063 in June, plant vending of all motor vehicles for the month reached 705,075 units. The April peak of 723,532 motor vehicles was not surpassed.

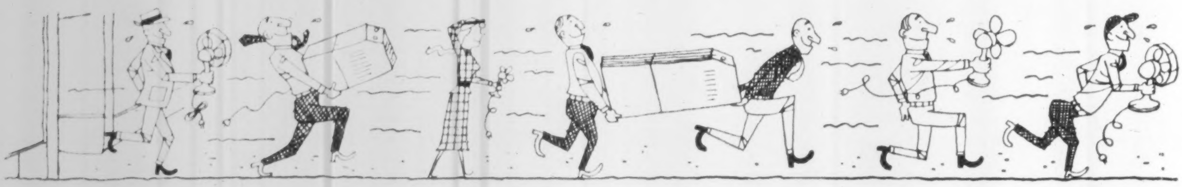
During the first seven months of the year 4,582,944 units were purchased from the factory.

Construction Outlays at Peak

New construction expenditures in August continued at a record level, totaling slightly over $3.3 billion, the Bureau of Labor Statistics says.

Among the different kinds of construction, commercial building continued its sharp upward movement of the past several months, rising more than seasonally, while dollar outlays for private residential construction declined for the second successive month.

Although the August figures probably overstate the value of work put in place during the month, because estimating techniques do not take into account the extent of numerous August work stoppages, construction spending in the first eight months of the year would still remain about 8 per cent above the amount for the same period in 1952. Volume in 1953 so far has totaled $22.7 billion.



Weather Puts the Heat on Fan and Air Conditioner Sales

THAT RUMBLING sound which echoed through the hot, dry air above most of the United States last week was not thunder.

It was the running feet of thousands of citizens as they stormed appliance dealers, hardware stores, department stores and drug stores for fans and room air conditioners.

Hot Item—Muntz Industries Inc. reported a 30 per cent jump in sales of room air conditioners in the ten days ending Sept. 1 in the Cleveland area even though Muntz has not strongly promoted there its entrance into the air cooler field.

Elsewhere the department stores reported fan sales whirred up 50 per cent over what they had been thus far in the summer, and houseware buyers beamed as they predicted a sellout before the season closed. One GE dealer said he has been "snowed under" a huge stack of back orders on window air conditioners as sales quadrupled the normal rate.

Ironically, Muntz reports TV sales dropped as air conditioner sales soared. People were gasping their way past TV departments on their way to cooler counters.

A Cinch Now — George Jones, acting executive secretary, Air Conditioning & Refrigerating Machinery Institute, Washington, says predictions of a better-than-one-million-unit year seem assured for manufacturers of room air conditioners now. Shipments through July were 212 per cent more than the 350,000 units shipped last year for the same period. As of mid-August there were scattered reports of some inventory build-up by dealers and distributors, but this last hot spell practically dried that up.

More than 50 per cent of all room air conditioners shipped are of the ¾-ton class and the price for that size hovers around the $200 mark.

Fans Hot, Too—Fan sales, based on six-month shipment figures by manufacturers for 1953, should be $50 million this year—up 6 per cent from 1952. Air conditioner sales do not seem to hurt fan sales, says the National Association of Fan Manufacturers in Detroit. A study revealed percentage increase of fan and air conditioner sales ran proportionally from World War II through 1952. Fans, being the most portable and least expensive way of avoiding heat prostration, are the most sensitive to weather conditions in the sales department. If you doubt that, go out right now to try to buy a fan. Unless you're in an exceptional area, your dealer will be entirely out or you'll get one of his last half-dozen in stock.

The weather is the best salesman for fans and air conditioning units. This year, it has done a good job.

A. C. Gilbert

Assembly lines roll faster as . . .

Toy Makers Keep Pace with the Stork

Four million births annually assure toy industry of continued boom. Buyers' market in steel paves way for $180-million volume in metal playthings

AS LONG AS THE STORK continues to make his record runs to American families, the toy industry is comparatively safe in predicting its business curve will continue to rise. Metal toy sales are currently running 10 per cent above the 1952 figure and industry officials report that total sales this year should hit $180 million.

With allocations a thing of the past and steel fast returning to a buyers' market, metal toy makers are beginning to flex their muscles in an effort to win back any markets they may have lost to the plastics field during the metal shortage. Normally 40 to 50 per cent of all toys are metal or have metal parts of some kind; during the metal shortage the ratio was considerably lower.

Made Their Own—One manufacturer related that it was his experience that plastics weren't hurting the metal toy business as much as might be expected because the field had developed its own particular items which, in many cases, couldn't be made economically out of steel anyway.

Few manufacturers contacted by STEEL had more than the normal concern about competition. In the toy industry competition has always been keen. Makers are expanding lines to meet the increasing market. They're not too much worried about new entries into the field because it's an extremely costly proposition and presents many problems to the newcomer unless, of course, he has some special item which the market will grab up immediately.

Import, Export—Imports of toys, according to the Toy Manufacturers of the U. S. A. Inc., are running about 10 per cent above the 1952 level of $2 million plus. U. S. exports last year amounted to over $5 million. Chief export markets are in South Africa, South America, Cuba, Canada and the Philippine Islands. Imports come mainly from Japan, Germany and the United Kingdom.

Like most industries, the toy makers are faced with maintaining quality without undue price increases because of the increase in costs of materials, transportation and labor.

They're Just Better—"Our biggest asset as far as foreign competition is concerned is our high quality of toys," says a Lorain, O., manufacturer. "The toy industry has done a fine job in the last 10 years of making better engineered toys which are substantial, useful and educational. This is borne out in the fact that toys of all prices—and some of them run pretty high—are selling well today."

Right now toy makers are busy meeting Christmas orders which will amount to about 65 per cent of the year's total sales. There was a time when the Christmas sales were nearly 90 per cent of the year's sales. "We don't ever expect to have sales level off completely into a year-around business," one sales manager said, "but it's getting better. Easter is getting to be a good season, summer brings its own particular demand and then the climax comes at the end of the year."

Where They Are—Most of the country's toys are made in the New England, mid-Atlantic and east-north-central states. The approximately 1500 toy makers show nearly 100,000 items at the annual Toy Fair in New York each March to some 10,000 buyers. That's where most of the ordering is done for the year.

Work started as early as last January for the new toy lines to be shown in March, 1954. With approximately 43 million kids under 14 in this country all wanting toys and another 4 million babies expected this year, they've got to start early. The stork won't wait.

AEC Assigns More Duties

The Atomic Energy Commission's agreement with Union Carbide & Carbon Corp. has been modified to include more operational responsibilities at facilities already under its management.

With the term of the agreement extended two more years, to June 30, 1957, Union Carbide has been placed in charge of the K-33 addition to the Gaseous Diffusion Plant and smaller facilities at the Y-12 Electromagnetic Separation Plant in Oak Ridge, Tenn. At Paducah, Ky., it will operate the addition to the Gaseous Diffusion Plant.

In addition to these facilities, now under construction, the modification provides for an extension of such company services as process design, development, engineering and assistance in procurement of process equipment for these plants and the Pike county plant now under construction in Ohio.

In the Works: New Components Study

WHAT COMPONENTS will we need under full mobilization by types, sizes and degrees of precision? What tools and facilities are needed to fill existing gaps in the capacity to produce these needed items? What will be the material needs for producing these items in the needed volume?

Those are questions to which the Office of Defense Mobilization now seeks the answers to perfect a mobilization-readiness program for the general components industry.

Tough Nut — The components problem ranks as perhaps the most complex within ODM's purview. It was not solved during World War II nor has it been in the current rearmament drive. The difficulty arises because components usually are bought by manufacturers for incorporation in their end products as gears and bearings in a machine tool or as supplies, as a steam valve in a hospital or a pump in an electrical generating plant. The approach in allotting materials has been to give the components manufacturers substantially what they asked, with reliance on the end-product controls to keep material demands from getting out of hand.

This method necessitated guessing, and allotments were based to a considerable extent on "hopes" that they would meet requirements. The guessing has not always been good proved by the difficulties that were encountered at times in the supplies of bolts, nuts and screws and other fastening devices, in ball and roller bearings, in high-pressure valves, in permanent magnets and in gears.

New Tack—The ODM concludes that the old approach is not satisfactory for the mobilization-readiness program now under development. But there's also no simple, direct attack on the problem for components are used universally.

The government itself will furnish a large amount of basic information in determining total needs for components under full mobilization. The military services will estimate their end-product needs. Agriculture will estimate farm machinery requirements, and other government agencies will furnish similar information about

Military Equipment Will Be Redesigned

A GENERAL REDESIGN of military equipment to eliminate use of imported materials has been called for by C. S. Thomas, assistant secretary of defense for supply and logistics.

The message, distributed to top military personnel, contemplates no immediate drastic changes; rather, it seeks the drafting of redesign blueprints which could be pulled out of pigeonholes on M-Day to permit immediate launching of a broad program of substitution and conservation in order to stretch out the supply of scarce materials as long as possible.

Safeguard—"Many of our most important weapons tanks, guns, ships, jet aircraft use imported materials including nickel, cobalt, columbium, tungsten, manganese and chromium. As we learned in World War II, war imperils our supply lines and the very sources of urgently needed materials.

Good sense demands that we conserve all types of military equipment with great care, that we strive to redesign equipment to eliminate uses of imported raw materials and that we utilize our salvage and scrap efficiently," says the Thomas statement.

Matter of Time—"We wait too long if we delay until we are in total war before designing military equipment using substitute and alternate materials. Our long-

End in Sight for Some Fast Write-offs

THE END OF FAST depreciation as a device for encouraging expansion is in sight for many industries.

Arthur S. Flemming, director, Office of Defense Mobilization, says that a "rather large percentage" of the 233 expansion goals so far set up will be closed out as a result of a review now under way to ratify the present belief that the needed expansion in these industries has been carried out or is under way. He did not identify the industries in which rapid amortization no longer will be allowed, but said he planned to issue a detailed announcement shortly.

Aid for Needy?—ODM, Dr. Flemming states, is considering a proposal to allow above-normal percentages of rapid depreciation on expansion projects located in surplus labor areas.

He reports a big improvement in the labor surplus situation. Only 26 areas today qualify as labor surplus areas those where 6 per cent or more of the labor is unemployed. This compares with 50 labor surplus areas a year ago.

An Example—Dr. Flemming cites the fire destruction of the Livonia plant of General Motors Corp. as an example of the dangers that may be encountered from undue concentration of specialized manufacturing operations in one spot and gives Defense department officials a clean bill of health on this needs for direct defense and for maintenance of a healthy civilian economy. From such data, it will be possible, with the aid of task groups of component manufacturers, to determine total component needs under full mobilization.

Big Task — ODM's toughest job will be in organizing the program so help from components manufacturers will be effective. NPA's General Components Division estimates that about 8000 components manufacturers produce 54 separate products categories and turn out hundreds of different items.

As so far completed, the blueprint calls for industry task groups for ball and roller bearings, optical elements, gears, fractional-horsepower motors, motors, generators and motor generators, pumps, including aircraft pumps, compressors, internal combustion engines, automotive wheels, automotive universal joints, heat exchangers, boilers, turbines, heavy forgings, valves, except aircraft and plumbing, gyroscopes and fans and blowers. It is likely that some 60 to 70 task groups altogether will be called into existence. In addition, there may be a need for calling individual companies which have exclusive specialties in the components field.

The Boss—In charge of the components study in an over-all way is William N. Lawrence, acting assistant director of ODM. Co-ordination of work will be in NPA's General Components Division, whose new director is Victor M. Spoehr, vice president and general manager, H. M. Harper Co., Morton Grove, Ill., succeeding Charles F. Stanley, who has returned to Fafnir Bearing Co., New Britain, Conn., as vice president.

WILLIAM N. LAWRENCE
. . . *components investigator*

range security depends upon achieving equipment designs that can be produced in adequate quantity and performance to meet the threat of total war and to win victory at least cost of lives and material. The time to design such equipment is while we can spare technical personnel for the job and while we can convert to the use of such new equipment with least dislocation of industry and combat troops. That time is now . . . Time is our most precious resource,' Mr. Thomas emphasized.

Studebaker Truck Contract Ends

Studebaker Corp. has built its last military truck under present defense contracts.

The company has made its 38,079th military truck since announcing it would resume such operations on July 1, 1950.

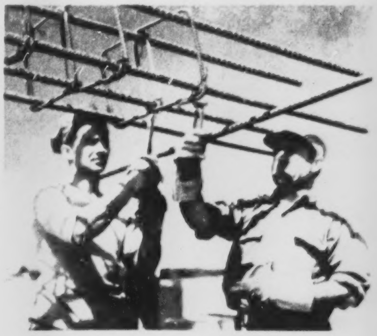
Although production of the vehicles is ended, Studebaker will continue to build jet engines for the government as long as the need exists, says P. O. Peterson, executive vice president.

FOR ARMAMENT
. . . *home-front materials*

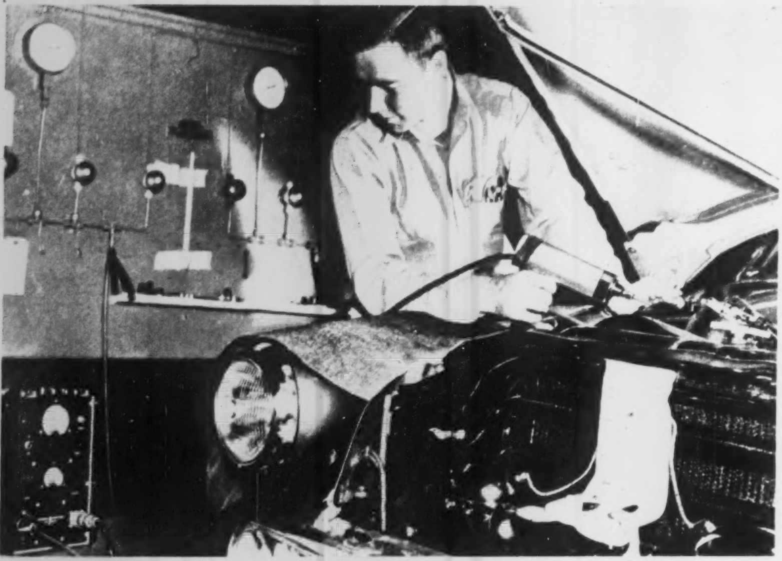
score. "To my knowledge," he states, "nothing is going on in the Defense department that is in conflict with the basic policy of establishing a broad, rather than a narrow, mobilization base."

Before final action can be taken on the proposals for a third round of expansion in aluminum capacity, involving the Wheland and Olin interests, it will be necessary to reach a "basic" decision, reports Dr. Flemming. But he does not disclose the nature of the problem to be resolved in this "basic" decision. He relates that despite resumption of aluminum stocking recently, 3 per cent more aluminum will be available to the civilian industry in the fourth quarter than in the third quarter. The increase can range to 6 per cent on the basis of expected increases from foreign sources. These figures refer to primary and secondary aluminum.

Not So — An earlier report by ODM that civilian users could expect appreciably more aluminum in the final period of the year was incorrect.



TIGHTENING UP
. . . *fast write-offs slow down*



Electronics Foils the Leaks

All air conditioning units installed in 1953 Dodge cars get an electronic check-up. The leak detector shown in use here can spot a gas leak so incredibly minute that it would take an ounce of refrigerant 100 years to squeeze out through it

More V-8s for Ford

Grading has begun on the site of a new Ford V-8 engine plant in Cleveland

PLANS to build a new engine plant adjacent to the present Ford Motor Co. foundry and engine plant in Brookpark Village, a Cleveland suburb, are announced by R. H. Sullivan, vice president and group executive.

Expected to be in operation early in 1955, the new plant will employ 3000 people in the manufacture of Ford V-8 passenger car and truck engines. Cost of the building and land for the new unit is reported to be between $4 million and $5 million, though Ford has not disclosed the exact expenditure involved. Approximately 4200 people are presently employed at the foundry and engine plant now being equipped to produce Mercury V-8 engines. The plant has produced Ford six-cylinder engines since September, 1951.

Dust is Flying—Grading has already begun on the 142-acre site which Ford will purchase from New York Central System. Total area of the manufacturing site will be 346 acres with the acquisition, and the new plant will add 562,000 square feet of floor space bringing manufacturing space to almost 3 million square feet when the expansion is completed.

H. D. Rowe, Cleveland engine plant manager, says the new plant will "add to our present engine capacity in Dearborn, Mich., and Cleveland, and will not replace any existing facilities."

Forced Growth — Most of the castings required for the new plant will be produced by Ford's Cleveland foundry which began operations in April, 1952. Additional space is available in the foundry and more equipment will be installed. About 1000 people reportedly will be added to the foundry payroll when the new plant begins operations.

A new office and service building will be erected to serve the new plant while utilities will be provided by the present power house.

Thirst Creates Opportunities

Federal allocations for the program of converting salt and brackish waters to fresh water now amount to $123,950 out of the $400,000 appropriated by Congress for this fiscal year.

In addition to the two projects already under way, Secretary of the Interior Douglas McKay recently approved nine other contracts. The projects cover varied fields but the primary objective is the discovery of a process that will reduce production costs. A satisfactory solution to the problem will create new fields for the use of steel and other metals.

Among the contracts, the $6000 one with Dr. O. G. Lof of Denver calls for a determination of the best methods for low cost demineralization of saline water through the use of solar energy. Some of the other projects are concerned with the development and testing of synthetic osmotic membranes to be used in separating salt from water and methods of improving heat transfer rates in vapor-vacuum evaporators.

GSA Gets DMPA Functions

Though the Defense Materials Procurement Agency has been abolished, its responsibilities for metals and minerals have been transferred to a new Materials Division in the General Services Administration.

Head of the new division is Irving Gumbel, who had been acting deputy administrator of the DMPA; he is to carry on with a smaller staff than before.

"We expect to continue a vigorous program to increase the potential of scarce metals and minerals," says a statement by GSA Administrator Edmund F. Mansure.

"There will be no letup to reach the goals set by the Office of Defense Mobilization . . . I urge everyone who has dealt with DMPA and others who may wish to do so to recognize that the change is one of internal organization—cutting out unnecessary administrative machinery—and that we are still going forward with the metals program . . . The new division is in GSA's Emergency Procurement Service, which handles national stockpile procurement, transportation and storage."

Zirconium Output Raised

Allegheny Ludlum Steel Corp. has expanded its program for the production of zirconium strip and other shapes for atomic energy applications.

The expansion is the result of over two years of research and production experience in melting and shaping zirconium metal. This work was carried on as a project in co-operation with the Atomic Energy Commission's Bettis Plant, Pittsburgh, operated by Westinghouse Electric Corp.

Formerly the U. S. Bureau of Mines produced the hafnium-free zirconium sponge and melted it into ingot form. Now, Allegheny Ludlum's Watervliet, N. Y., plant, through a double melting procedure, is able to melt the sponge while maintaining the high purity necessary. Unique furnaces are used for the melting, but processing from the ingot stage is accomplished on regular mill equipment.

Although most of the output is in strip, with some small flats and on occasion wire, Allegheny Ludlum feels that it will be possible to turn out any product normally produced on steel mill equipment. Experimental work completed to date suggests that zirconium tubing from an extrusion press is practical.

Air Force Cuts Back 965 Planes

The Air Force will cut back its aircraft production program by 965 planes costing about $1 billion.

The move is not an economy drive. It is caused by a restudy of training plane requirements and by the fact that planes are no longer being shot down in Korea.

July Personal Income Climbs

Personal income in July was at an annual rate of $288 billion, more than $1.5 billion higher than in June, says Commerce department's Office of Business Economics. For the first seven months of 1953 personal income was at an annual rate of $284 billion, 7 per cent higher than for the same 1952 period.

Sept. 15: BSDA Target Date

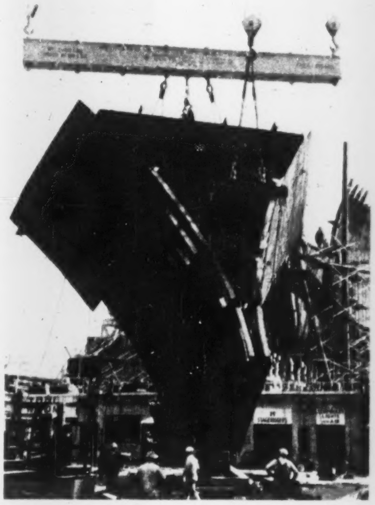
Inception date of the Business Services Defense Administration as the successor to the National Production Authority has been moved forward for the second time to Sept. 15.

Organizational plans have been readied by Commerce department officials but clearance of the BSDA under the antitrust laws must still be arranged.

Three Mariners Sold

Shipbuilders encouraged by sale of the U. S.-sponsored vessels to a private owner

THE NATION'S shipbuilding industry shook aside a little of its doldrums Aug. 31. The occasion was the signing of contracts for the sale of three Mariner class dry cargo ships by the Federal Maritime Board to Pacific Far East Line Inc., San Francicso, which is to operate them on regular schedules between that port and various far eastern points.



MORE SHIPBUILDING?
. . . Mariner sales should help

32 To Go — The government placed contracts for a total of 35 Mariners thus leaving 32 vessels still to be sold to achieve the goal of turning the entire fleet over to private owners. The three ships sold to Pacific Far East are under construction by Bethlehem-Pacific Coast Steel Corp. at San Francisco and are scheduled for completion by mid-1954.

They will be operated by the shipping company under an operating-differential subsidy contract with the government. The sales price of each of the three ships, allowing for the difference in construction costs in foreign and domestic yards and for the national defense features which do not have commercial value, will figure out to between $5,460,000 and $6,250,000. The board still has to reach a determination. Actual cost averages about $9.5 million per vessel.

In Progress—Louis S. Rothschild, FMB chairman, says that negotiations are under way with other shipping companies for the purchase of additional Mariners. The 13 Mariners thus far built are all being operated by agents of the board to transport military cargoes.

Besides Bethlehem-Pacific, other builders of the ships include Ingalls Shipbuilding Corp., Sun Shipbuilding & Dry Dock Co., New York Shipbuiding Corp., Bethlehem Steel Co. at its two East Coast yards and Newport News Shipbuilding & Dry Dock Co. Five vessels have been or will be constructed at each of the seven yards.

Self-authorization Extended

Self-authorization procedure to obtain maintenance, repair and operating materials under the Defense Materials System has been extended to manufacturers of unclassified products and materials with the issuance of Direction 4 to DMS Regulation 1.

In addition, a companion Direction 3 was issued to DMS Regulation 2 covering MRO requirements of construction contractors. The directions provide a means of permitting any manufacturer to comply with the delivery requirements placed upon him by NPA regulations when inability to obtain MRO materials without priority or allotment authority threatens his production schedule.

At the same time, Amendment 1 to DMS Regulation 1 and Amendment 1 to DMS Regulation 2 deleted MRO provisions from those regulations. All actions were effective Aug. 27.

Unemployment Equals Low Point

Unemployment dropped in August to match the post-World War II low. Estimated at 1,240,000 in the week ended Aug. 8, unemployment was about 300,000 below the July level, says the Census Bureau.

Estimated at 63.4 million, total civilian employment was about the same as in July but exceeded the level of a year ago by about 1 million.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Eisenhower appointees will soon be in the majority on the NLRB. Employers can expect more objective decisions from the board when the transition is complete

WILL EMPLOYERS get a better break at the hands of the National Labor Relations Board as Eisenhower appointees come into the majority and Truman appointees fade into the past?

Indications are that they will, but concrete evidence remains to be seen in the future.

Coming Soon—John M. Houston, a Truman member of NLRB whose term expired Aug. 26, has been succeeded by Philip Ray Rodgers. Paul L. Styles, another Truman appointee, resigned effective Aug. 31 and appointment of his successor is expected any day. With Guy Farmer, who recently succeeded Paul H. Herzog as chairman of NLRB, the board will have a 3-man majority of Eisenhower men.

Remaining Truman holdovers are Abe Murdock, whose term expires in December, 1957, and Ivar H. Peterson, whose term ends in August, 1956.

Late Decision—Among the last decisions handed down by the Truman-heavy NLRB was one which declared all automobile dealers, aside from some in state border cities, to be within the board's jurisdiction. Previously such auto dealers had been regarded as local, intrastate firms. The board ruled that automobile dealers are part of the nationwide system of manufacture and distribution of automobiles, and ordered John A. Klinka, garage operator at West Bend, Wis., to reinstate two employees he was accused of discharging because they had acted as union organizers at the Klinka shop.

In another recent decision, the board found an employer in violation of the labor-management act because he failed to inform the union in a closed-down plant that operations would be shifted to a plant in another city. The employer in this case was Brown Truck & Trailer Mfg. Co., Charlotte, N. C., which transferred its production of ammunition boxes to a subsidiary plant at Monroe, N. C.

In both these cases and others, Chairman Farmer dissented from the board decisions, thus affording some indication that more fair-minded decisions may be expected after the Eisenhower appointees are in the saddle.

Challenge to Fair Trade . . .

Far-reaching effect on the nation's commerce and trade patterns is expected by the House Small Business Committee from a Supreme Court decision expected next year on an appeal from Schwegmann Brothers Giant Super Markets, New Orleans, inviting the Supreme Court to pass on the constitutionality of the fair trade principle. While the Supreme Court in 1936, in the Old Dearborn Distillers case, upheld the constitutionality of state fair trade laws, the Schwegmann appeal assumes that the court's decision in the distillers case "opened the door for a reexamination of fair trade as coercive price fixing subject to constitutional limitations imposed on any other price fixing." The appeal questions the "constitutionality and enforceability of fair trade price fixing sought to be imposed on nonsigners in transactions affecting interstate commerce."

The United States Court of Appeals in New Orleans recently upheld the constitutionality of both the Louisiana Fair Trade Act and the federal McGuire Act, and it is this decision Schwegmann Brothers seeks to upset.

On Loan to ODM

Thomas R. Reid, now on loan from Ford Motor Co. to the Office of Defense Mobilization, heads up the ODM study on "Utilization of Manpower." That report has been completed by ODM and will be issued shortly after review by the President's National Labor-Management Manpower Policy Committee and Inter-Agency Manpower Policy Committee

In Search of Security . . .

At least one of the Bureau of Mines' top officials, whose tenure in office had been rendered insecure through transfer from merit system ratings to Schedule C, which subjects such officials to dismissal in accordance with the judgment of the secretary of the interior, has resigned. He is Dr. William C. Schroeder, who left his position as assistant director of the bureau to take a teaching job at the University of Maryland and do consulting work.

Advice on Tariffs Sought . . .

Hearings have been scheduled by the government's interdepartmental Committee on Trade Agreements for Sept. 14 on temporary accession to the General Agreement on Tariffs & Trade by Japan, and on proposed extension for 12 to 18 months beyond next Jan. 1 of the deadline after which any countries adhering to the agreement could cancel any specific tariff concessions they choose. The hearings will be held in the Tariff Commission building before the Committee for Reciprocity Information to help shape the government's position in the GATT meeting to open Sept. 17 at Geneva, Switzerland.

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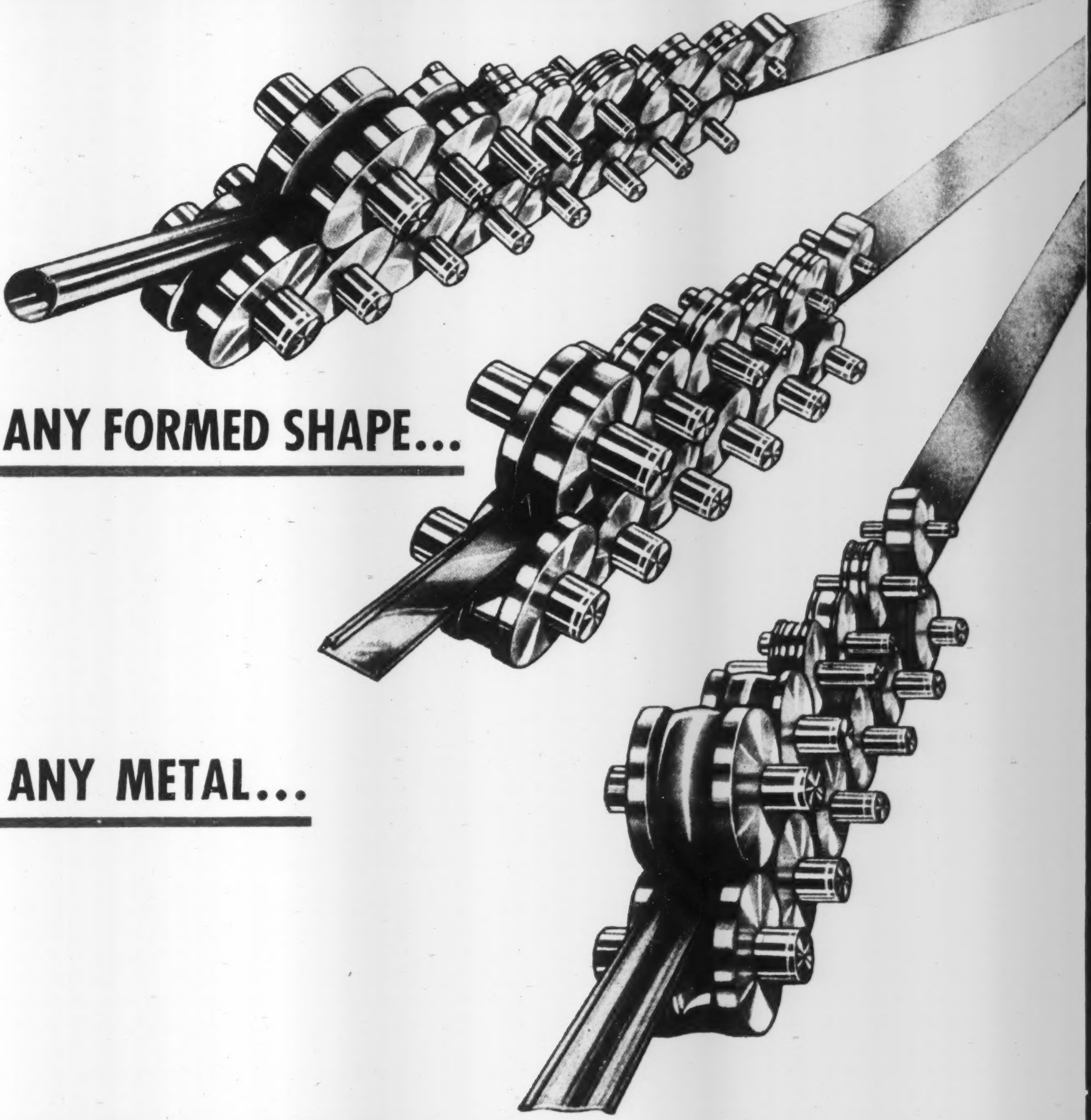

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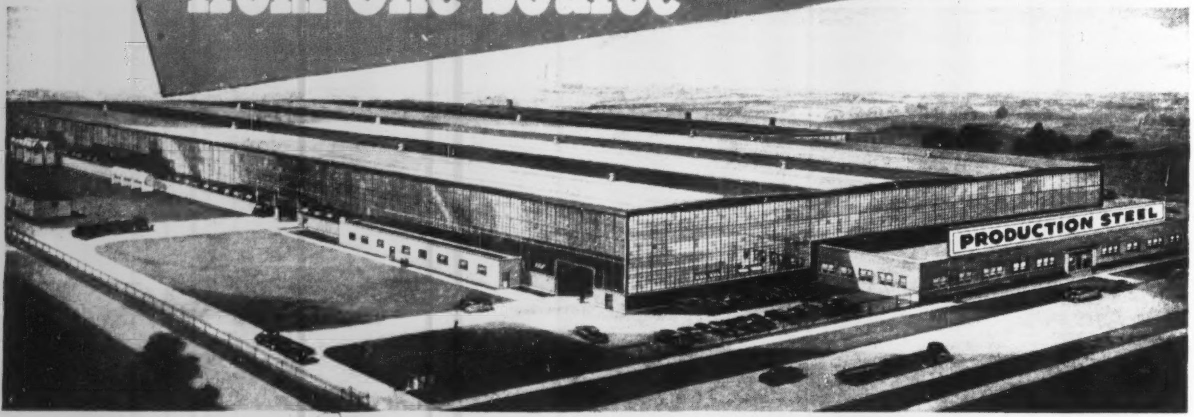

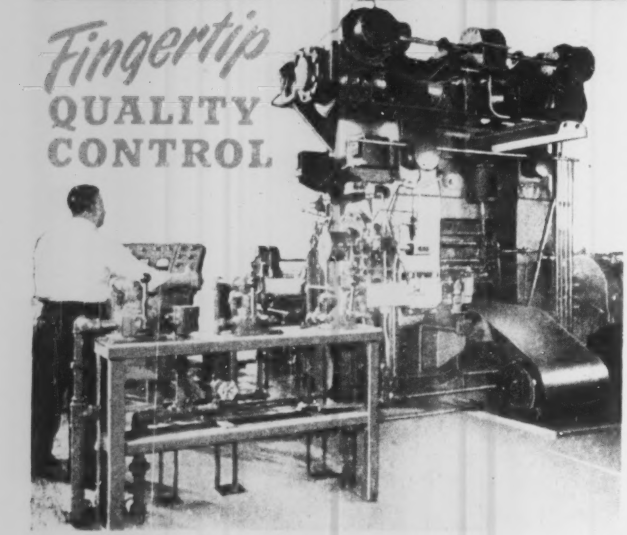

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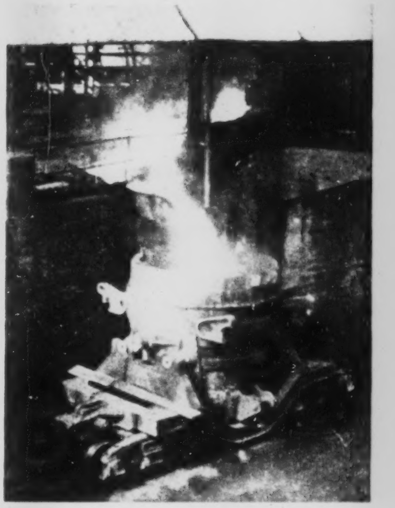


Molten pig iron flows from blast furnace to ladle at the Altos Hornos plant in Monterrey, Mexico

MEXICO

Steel Exports from South of the Border

That's the goal of the Mexican iron and steel industry, but it's a long way off—1960 at best. Mexican mills hope to supply 90 per cent of domestic needs by 1954

MEXICAN iron and steel mills now produce about 69 per cent of domestic requirements. If present plans materialize, the gap toward 100 per cent will be further closed next year.

Mexican production of iron and steel rose from 132,000 tons in 1939 to 465,000 tons in 1951 and to 536,000 tons in 1952. Present iron and steel needs are estimated at 852,000 tons.

King Pins — Two major plants still account for 8 out of every 10 tons of iron and steel poured in Mexico: Altos Hornos de Mexico and Fundidora de Fierro y Acero in Monterrey and Monclova, Mexico. But by 1954 another major producer will enter the field when Mexicana de Coque in the city of Monclova gets into production. This $10,470,000 plant is being financed by Nacional Financiera (a partly government-backed financing organization) and Altos Hornos. The Chamber of the Iron & Steel Industry (a national trade association) now has a membership of 109, including representatives of perhaps two dozen smaller mills scattered across Mexico.

Other expansion plans include the modernization of rolling mills of Fundidora, La Consolidada, Hojalata y Lamina and a number of smaller mills. Initially $25 million has been set aside for this purpose. Two new blast furnace installations are in the planning stage, one at Durango and another at Puerto Marques, near Acapulco. The latter plant would use iron ore from the Las Truchas iron deposits which assay at 64 per cent iron content and the Pluton iron mine near the Rio Balsas with ore of more than 61 per cent iron content.

Scrap Problem — Mexico's iron ore reserves are estimated by the Bank of Mexico at 300 to 500 million tons. Enough for 120 years, the Mexicans figure, if their average peak consumption reaches 1.5 million tons a year. Mexico's coal reserves now stand at 2 billion tons, with about half of this capable of furnishing 500 million tons of coke. But melting scrap already is a problem in Mexico. Last year, in the first organized salvage drive, the National Railways of Mexico provided 40,000 tons of scrap to 16 mills while 30,000 tons were gathered from other sources. Mexican attempts to have its quotas of scrap shipments from the U. S. raised have thus far met with failure and the problem continues to be one of the Mexican iron and steel industry's most pressing ones.

The grand plan for iron and steel in Mexico calls for construction of major mills in the central region of the country for production of finished and semifinished products. Medium-sized plants are to be built near ore fields to supply regional markets and, later, to be co-ordinated in a drive to gain export markets.

Even the most optimistic, however, do not envisage such Mexican exports before 1960 even if no snags develop in the current expansion program.

Russia Claims Output Gains

The Soviet Union announced a 9 per cent increase in steel production during the first half, 1953, compared with the same period last year. Rolled iron output gained 9 per cent, steel rails 15 per cent, steel pipe 14 per cent, pig iron 12 per cent and coal 6 per cent.

Assuming the accuracy of 1952 production figures reported by Premier Malenkov at the 19th Communist Party Congress last fall, Russia's first-half, 1953, steel output was at an annual rate of 38,150,000 tons, pig iron 28 million tons, rolled steel 29,430 000 tons and coal 318 million tons.

More Price Cuts Coming

Watch for more steel price cuts from European producers. In July, Belgian steel output was 17 per cent below that in June; production in France declined 12 per cent in the same period. West German steel output was 11 per cent below the monthly average for the first quarter of 1953.

Pressure is increasing for strict observance of the price regulations among members of the European Coal & Steel Community, too. Exporting manufacturers were previously given a 5 per cent discount by German iron and steel firms. That has been shaved to 4½ per cent for non-European, non-ECSC exports and 3½ per cent for European, non-ECSC exports.

It's all part of a world-wide decrease in demand coupled with a world-wide increase in steelmaking capacity.

SURVEY REFLECTS WEST'S EXPANSION . . .

U.S. Foundry Population Hits 5387

CALIFORNIA'S RAPID industrial growth is reflected in the number of foundries it has gained in the past two years. According to *Penton's Foundry List* just issued by the firm that also publishes STEEL, California gained 60 new foundries since 1951 while the gain for the U. S. was only 88.

Total foundries for this country and Canada are now 5938. Canada dropped 17 foundries to 551 and the U. S. increased from 5299 to 5387 foundries in the two-year period.

The Most—Responsible for the increased number in shops are new foundries in the nonferrous field which jumped from 2124 to 2498 in the two countries. These are exclusive nonferrous foundries; the total number of nonferrous foundries which includes plants also making ferrous castings is 3604.

Gray iron producers accounted for the biggest decrease in the past two years with a drop of 72 foundries. However, there was a net gain of 30 companies making steel castings.

Ohio Still Tops—Ohio still leads as the state with the largest number of foundries and gained eight in the past two years for a total of 569. Pennsylvania dropped four foundries but remains second in total number with 513 followed by California, Illinois, New York, and Michigan. Ton-

Geographical Distribution of Foundries in the United States

	Total Foundries		Gray Iron Foundries		Steel Foundries		Malleable Foundries		Total Nonferrous		Brass & Bronze	Aluminum	Magnesium	Permanent mold	Centrifugal mold	Plaster mold	Investment mold	Shell mold
	1953	1951	1953	1951	1953	1951	1953	1951	1953	1951								
Ala.	105	99	88	84	9	5	3	3	32	33	16	28		7	7	1		4
Ariz.	7	5	3	4	3	3			5	2	3	3		2	1	1		
Ark.	18	16	12	13	1	1			11	8	5	10		4		1		
Calif.	481	421	139	139	35	35	4	10	364	297	217	304	33	102	34	21	15	23
Colo.	44	46	20	21	5	5			27	28	17	25		12				
Conn.	145	144	55	53	6	6	6	6	103	103	82	82	5	16	2	2	1	4
Del.	9	9	3	3	3	3	1	1	5	5	5	3						
D. C.	2	2	2	2	2	2	1	1	2	2	2	2	1	1	1	1		1
Fla.	45	44	20	17	1	1		1	38	40	27	35	3	11	2	3		1
Ga.	69	74	50	56	3	4			35	39	24	31		6		3		1
Idaho	7	6	6	6	1				5	4	5	4		1				1
Ill.	436	441	177	186	35	30	18	20	252	233	159	203	12	43	10	12	9	15
Ind.	231	248	117	127	9	8	8	8	116	122	84	96	6	21	6	4	2	9
Iowa	88	94	57	59	3	3	1	1	43	46	26	36	1	10			3	2
Kans.	54	53	29	32	1	3		1	27	25	17	24	5	5		1		
Ky.	33	34	22	21	1	1			20	19	16	13	1	1	1	1	1	
La.	34	31	19	20	5	5	1		19	18	14	14		3				
Me.	22	25	17	20				1	14	20	14	10	1	1				
Md.	43	39	20	20	2	2	2		28	25	24	23	2	3	2			1
Mass.	222	222	97	99	13	14	4	5	144	137	125	117	8	16	9	5	7	6
Mich.	386	370	170	171	31	25	9	10	218	201	152	152	16	50	20	7	9	20
Minn.	95	102	54	60	5	4	1	1	44	46	34	39	3	9	1	1	2	2
Miss.	11	10	11	10				1	6	4	5	5		2				1
Mo.	127	128	44	44	11	10	1	1	82	83	53	70	4	21	3	1	2	2
Mont.	7	6	5	5					4	4	3	3		2				
Nebr.	26	25	14	15	1	1			21	18	15	19	1	5		3		1
Nev.	2	3	2	2		2			2	1	2	1		1				
N. H.	26	26	16	17	3	2	1	1	17	17	17	13	1	1			2	
N. J.	223	204	86	85	15	16	2	5	159	129	126	122	9	28	10	5	10	10
N. M.	5	4	2	1					3	3	2	3						
N. Y.	408	405	162	169	27	26	11	12	288	266	227	240	17	43	21	15	21	28
N. C.	67	69	56	56					42	48	38	39		2		2		2
N. Dak.	3	3	3	3					2	2	2	2						
Ohio	569	561	237	241	35	32	20	20	331	321	213	256	18	62	21	24	12	12
Okla.	41	41	22	26	2	2		1	27	26	20	23	2	4	2	4	1	3
Oreg.	62	61	34	36	8	7			31	33	27	24	2	3	3		1	
Pa.	513	517	290	295	67	64	12	17	269	264	222	192	8	30	22	7	6	14
R. I.	39	37	13	14			1	1	27	19	23	21		2	1	5		2
S. C.	25	24	20	20	1	1			19	17	17	18	2					
S. Dak.	3	3	3	3					1	2	1	1						
Tenn.	75	75	62	63	4	3			36	32	27	32	1	5	1	3		2
Tex.	143	131	75	73	11	11	1	1	86	79	70	71	6	16	5	6	1	2
Utah	19	19	16	15	2	2			8	6	8	7	1	3	2			2
Vt.	19	20	15	15					8	9	8	6		1				1
Va.	58	64	50	55	5	5		1	31	41	29	22		6	4	1		3
Wash.	74	75	38	39	18	17	1	1	51	50	43	42	2	3	2	1		4
W. Va.	39	38	20	20	3	3	1	1	21	22	20	15	1	3	3	1		
Wis.	226	224	118	123	17	13	11	12	116	113	90	101	4	31	9	4	2	9
Wyo.	1	1		1						1								
Total	5387	5299	2591	2659	404	377	121	144	3240	3063	2376	2602	176	598	205	146	107	188
Canada	551	568	363	367	36	33	16	17	364	365	284	313	13	59	16	15	6	9
U. S. & Canada	5938	5867	2954	3026	440	410	137	161	3604	3428	2660	2915	189	657	221	161	113	197

nagewise, Michigan with its large automotive foundries leads.

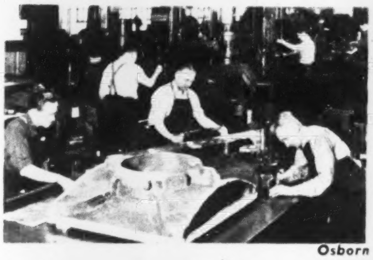
States with the most gain in number, in addition to California, were Michigan 16, New Jersey 19 and Texas 12.

Growing—*Penton's Foundry List* study also shows that permanent mold and centrifugal castings producers continue to grow. Of interest, too, is the fact that 197 foundries said they are making shell mold castings. This compares with 113 producing precision investment castings and 161 casting in plaster molds.

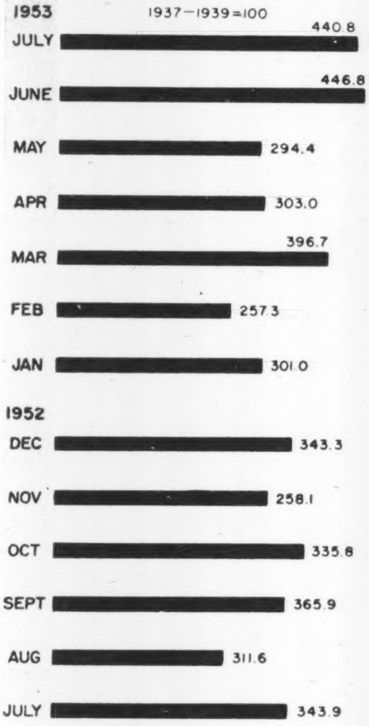
Nearly half (48 per cent) of all foundries are strictly jobbing shops, 16 per cent are captive and the balance make castings both for their own use and for sale.

EMPHASIS ON MODERNIZATION KEEPS . . .

Foundry Equipment Sales Strong



Osborn



FOUNDRY EQUIPMENT ORDERS REACHING FOR RECORD

Source: Foundry Equipment Manufacturers' Association

FOUNDRY EQUIPMENT manufacturers are sailing high on the wave of modernization in America's foundries. The wave may break before the year is out, but it won't completely wash out the near-record level of orders marked up so far.

Reporting members of the Foundry Equipment Manufacturer's Association indicate that at least through July they were still receiving heavy orders for new equipment (see chart at left). If the trend were to continue unabated during second half, the industry could chalk up a new record, but few manufacturers feel that optimistic.

Down, But Still Good — Commerce department's "1952 Annual Survey of Manufacturers" reveals that in 1952 over $174-million worth of foundry machinery and equipment were sold, topping 1951 by about $12 million. Most makers of that equipment feel that business in the second half will slip off enough to cut the total 1953 figure about 10 per cent under a year ago. Some manufacturers already point to a decline in orders, but hasten to add that much of it has come in the past 60 days. But as a district manager for Whiting Corp., Harvey, Ill., says, "Last year and 1951 were unusually good, so a tapering off seems worse than it really is."

With continuing high sales, about the only thing that really bothers the industry is the lack of skilled labor. One large firm reports that the chief limiting factor on its ability to produce is the lack of trained engineers. All report that they are deficient in one or more of the skilled trades and that shipments would be higher if the problem could be solved. Even at that, delivery dates are much improved over a year ago.

Comfortable—Backlogs are considered sufficient by most of the makers of foundry equipment. Last year, the average was about five months. Now the reports run all the way from two or three months up to six or seven months, with the average between three and four months.

The peak of expansion is past, even though there is still enough new construction to be felt in the equipment makers' sales. But the main reason the industry is so busy is that foundries are making a concerted effort to modernize in an attempt to cut costs, reduce labor requirements and make the foundry a more attractive place in which to work.

Cost-cutter—Mechanization has played an important part in that effort. Such equipment as the new rotary automatic molding machine just developed by Osborn Mfg. Co., Cleveland, is an example. This machine will produce over twice as many cylinder-block molds a day as the old methods requiring much more labor, thus cutting both costs and manpower.

Many manufacturers are looking to the shell molding technique to furnish their industry with a new sales market. They feel that the method will not supplant conventional methods and equipment. Rather it will supplement present techniques and furnish equipment makers with a new sales potential, at the same time preserving the older replacement market. But at present only 197 out of the 5938 foundries listed in *Penton's Foundry List* (see opposite page) have shell-molding facilities. So many equipment makers have adopted the wait-and-see attitude.

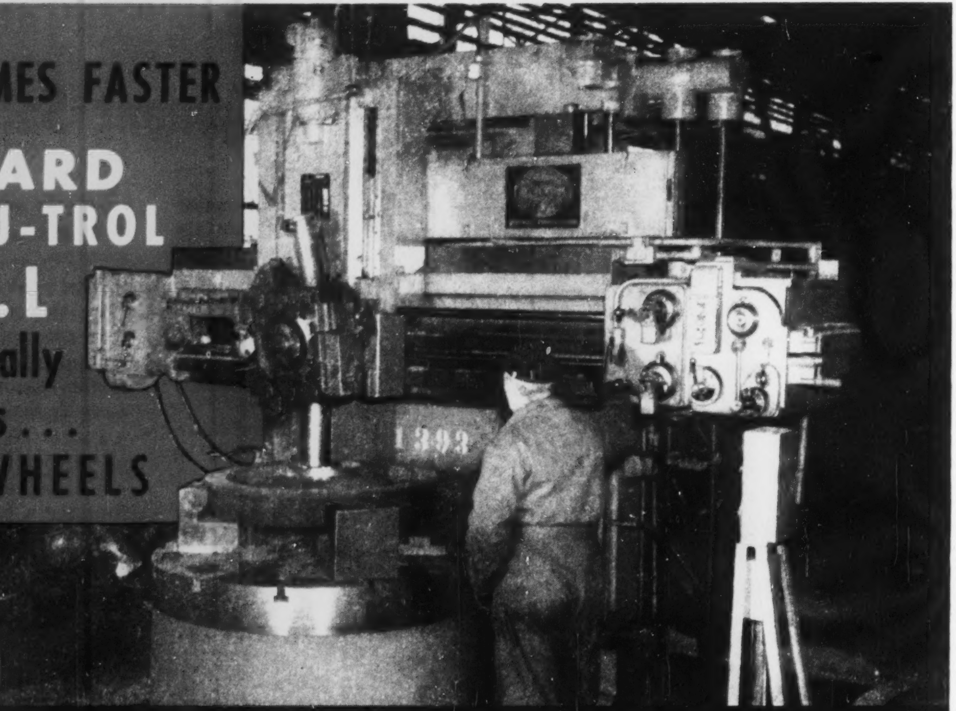
Everything Helps—The replacement market usually is not great, because an installation of major equipment in a foundry is good for anywhere up to 60 years with proper care and maintenance. But the modernization program is keeping that field active, too.

Arthur J. Tuscany Jr., assistant treasurer of FEMA, which has about 60 members, feels that overall this will be another good year in a succession of good years. He says that the effects of the Korean truce so far have been small.

IT'S 3 TIMES FASTER

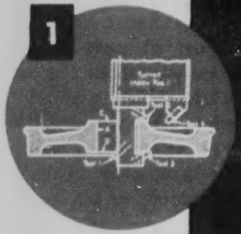
BULLARD MAN-AU-TROL V.T.L

Automatically Machines . . . DIESEL WHEELS



Boston and Maine Railroad takes advantage of a 54-inch Bullard Man-Au-Trol V. T. L. for machining three sizes of Diesel Locomotive wheels 3 times faster than formerly.

1



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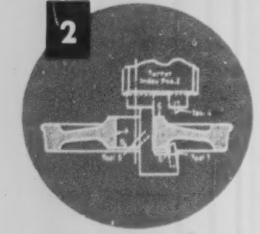

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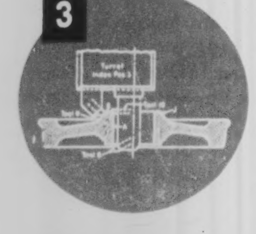

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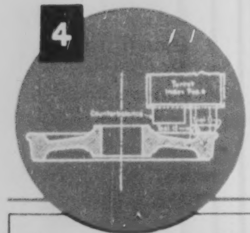


Proper tooling, proper sequence and automatic timing of operations, maintains accuracy and saves much time.

Turret Face #1

Rough bore — straddleface hub — rough form upper radius.

Turret Face #2

Semi-finish bore — finish face upper hub face — rough form lower radius — generate 20 degree angle — finish form lower radius — generate 45 degree angle and finish face underside of hub.

Turret Face #3

Finish bore and chamfer — finish form upper radius — finish hub diameter.

Turret Face #4

Face rim — cut wear groove.

In addition to this method, ask for information on the 54-inch 3 Head Bullard Man-Au-Trol Car Wheel Machine.

There is a Bullard machine for nearly any railroad vertical boring, turning and facing job as well as the regular horizontal boring, drilling and milling jobs.

Write for information relative to your specific work.

BULLARD

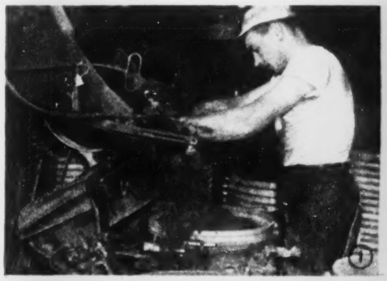
THE BULLARD COMPANY

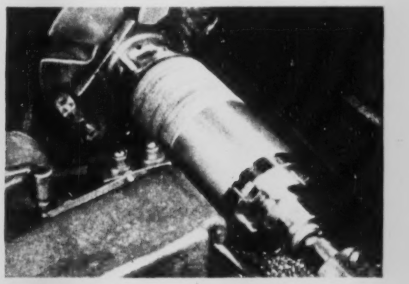
BRIDGEPORT 2, CONNECTICUT

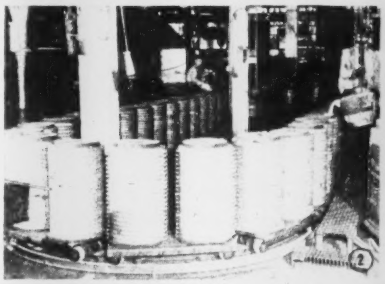
By FLOYD G. LAWRENCE *Detroit Editor*

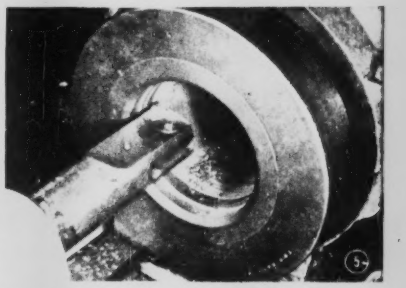
Mirrors of Motordom

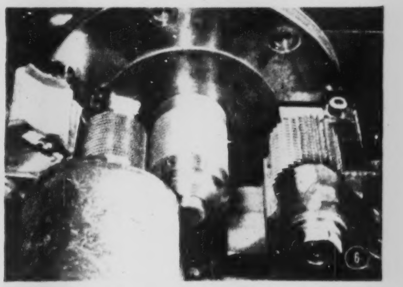
Need new rings in your car? Here's how Perfect Circle Corp. turns them out—with the aid of ingenious equipment

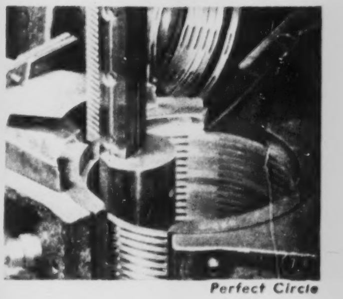












Life History of a Piston Ring

1. Packing molding sand over ring pattern.
2. Pouring iron into molds on conveyor.
3. Shaking sand from "ring tree" on vibrator.
4. Turning out-of-round outside diameter.
5. Boring piston ring inside diameter.
6. Machining channels, slots and grooves.
7. Broaching the gap in a group of rings.

Perfect Circle

DETROIT

PERHAPS NO PART of an automobile verges on the occult as do the piston rings. Men who would never think of spending money on hair restorer will faithfully anoint their piston rings with mystical oils and scented ointment to forestall that tell-tale wisp of blue exhaust smoke and the shame-laden epithet—"his rings are shot."

The mystical oil makers are unquestionably doing all right. But perhaps it is more significant that the piston ring manufacturers are doing all right, too. They produce approximately 554 million rings a year to satisfy original equipment, after market and export requirements.

Design—Where these rings come from is something the average person knows as little about as how to keep them from wearing out. A visit to Perfect Circle Corp. at Hagerstown, Ind., largest of the 43 firms in this highly competitive business, dispels the common belief that all piston rings are slices of close-tolerance sewer pipe. In fact, the typical cast iron automotive piston ring in the unconfined state as it is manufactured is far from a perfect circle.

A properly designed piston ring exerts some pressure on the cylinder wall at all points on its circumference but not necessarily equal pressure at all points. Since in this somewhat horse-shoe shaped spring, the stress is less at the two ends than at the center, the modulus of the cast iron is an important consideration. Further complicating the situation is the fact that cast iron is actually a plastic and not truly an elastic substance and the further consideration that the modulus of the cast iron will vary from one point on the ring to another if hard spots are permitted to develop. Thus, designing the shape of a piston ring is a knotty problem in metallurgy and physics which has only in the last five years been resolved into an engineering formula with relative success.

Pattern for the Job—Once the shape of the ring has been established, steel patterns are turned on a lathe utilizing a cam-actuated tool holder to generate the proper shape. The patterns are made individually to tolerances of plus or minus 0.001-inch and are then inserted in circular plates and gated ready for use in the foundry.

The making of patterns is a busy operation at Perfect Circle for few rings are interchangeable from one manufacturer's specifications to another. At present the firm estimates it is storing in excess of 3000 patterns for reorder runs at its foundry in New Castle, Ind.

500,000 Per Day—A typical automotive piston ring is cast six

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rings to each circular layer of the mold made from the pattern plate, and a stack of 20 layers containing 120 rings makes up a mold ready for pouring. With two hopper-fed sand molding machines supplying each of 12 conveyor lines, the Perfect Circle foundry is capable of turning out over 500,000 piston ring castings in two shifts every day.

After being cast, the rings are tumbled to remove loose sand which would abrade tools excessively. A visual inspection follows for casting flaws. Then the rings are ready for rough surface grinding. This is done on one of ten machines designed by Perfect Circle which pass the rings from hoppers through a pair of grinding discs automatically at a rate of almost 10,500 per hour. The machines adjust themselves automatically to compensate for disc wear. With the flat sides rough ground and checked for flaws, the rings are trucked to the Richmond, Hagerstown and Tipton, Ind., and Toronto, Canada, plants for finishing.

Grinding Fine—At these plants the first operation is finish grinding the sides of the rings. This is accomplished on machines similar to those at the foundry using successively finer grits and shallower cuts. The rings are then washed in oleum to remove particles of abrasive and dried in baskets which move slowly down a conveyor between two batteries of infra-red lights. A percentage inspection follows.

Ready for machining, the ring looks like a slightly flattened circle with a lug extending inward from the center of the flattened side. The reason for the lug now becomes apparent. The rings are placed on a small-diameter, horizontal rotating shaft for aligning. As the lugs reach the shaft they prevent the ring from rotating farther and the operator can remove them properly aligned for machining.

Special Design — The rings are placed on an arbor which in turn is placed on a machine that thought it was going to be a turret lathe when it grew up. Instead, Perfect Circle bought the beds and headstocks and added equipment of its own design which modifies them for cam-controlled OD turning. As the carbide tool bit moves down the arbor of piston rings it moves in and out generating the proper finished shape for the OD of the piston ring.

When this cut is made, the arbor is removed from the machine by the same operator and placed on a Perfect Circle-modified milling machine which traverses the arbor laterally to mill one side of the piston ring slot. It then indexes the arbor and moves it back through the row of rings again cutting the other side of the slot. With two passes, the proper angular relationship of the ends is imparted to make them parallel when the ring is closed in the engine cylinder.

Mass Production — The piston rings are then taken to a battery of especially designed boring machines. A stack of piston rings is loaded into the hopper and one at a time the hydraulic ram of the machine forces them into a sleeve the diameter of the auto engine cylinder and down over a circular boring cutter which finish bores the ID of the piston ring. One operator can run four of these two-spindle machines easily, producing over 6000 pieces an hour.

In the case of oil rings, these are loaded into one of another battery of machines designed and built by Perfect Circle. Each load of about 18 rings is automatically positioned properly and clamped on a horizontal spindle. One set of cutters moves in to cut the oil slots as the rings index. Next, a second set of cutters moves in and cuts the channel around the circumference of the oil ring. Finally an arm with emery cloth moves in and removes the burrs.

Ready To Go—After finish turning, which is the final OD operation, the rings are run through an end sizer which removes 0.005-inch from each end of the ring automatically. The piston rings are then complete, ready to be given a final inspection and oil dip and wrapped for shipment. These are the manufacturing operations for a typical automotive ring. However, many rings have special operations in addition to those mentioned.

One type of compression ring, for example, requires that a groove be cut into one corner of the inside diameter. This is done automatically on a battery of seven machines which one man operates to produce over 4000 pieces an hour.

Other rings must be chrome-plated. As engine speeds go up, piston rings must be made lighter both to lessen inertia (permitting them to follow the piston), and to permit them to conform to the cylinder wall more readily. As the rings become thinner, in turn, the wearing surface becomes smaller and chrome plating is called for. At present the chrome plating is required in most cases only on the top compression ring which normally wears fastest and actually extends its life so that it wears out with the rest of the rings.

To Combat Wear—Other trends that will bear watching include the use of cast-in cast iron ring groove inserts which seem to have a promising future in limiting ring groove wear in aluminum pistons at today's high engine speeds. Already being used extensively in commercial vehicles, the cast-in groove insert is proving itself economically.

Oh, yes, what can you do to make your rings last longer? Perfect Circle experts say the biggest enemy of piston rings is dirt in the air of the air-fuel mixture. Keeping the air cleaner clean is the best way to lengthen ring life for the average car owner.

Auto, Truck Output

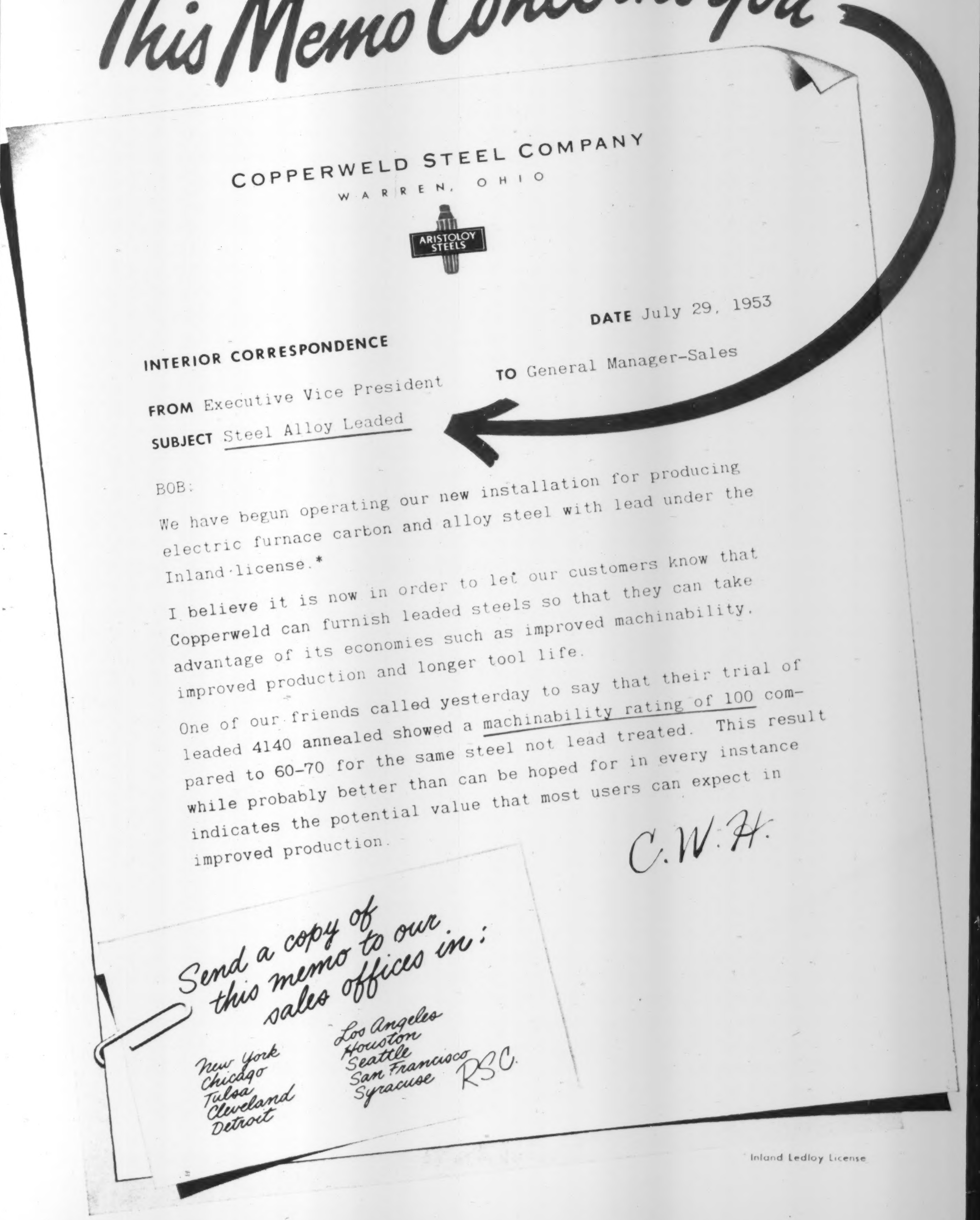
U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	757,595	226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509
Week Ended	1953	1952
Aug. 1	168,267	22,181
Aug. 8	137,671	43,964
Aug. 15	156,526	36,890
Aug. 22	163,635	109,588
Aug. 29	155,362	122,659
Sept. 5	151,000	111,095

Sources: Ward's Automotive Reports.
*Estimated by STEEL.

(Advertisement)

This Memo Concerns You



COPPERWELD STEEL COMPANY
WARREN, OHIO

ARISTOLOY STEELS

DATE July 29, 1953

INTERIOR CORRESPONDENCE

TO General Manager-Sales

FROM Executive Vice President

SUBJECT Steel Alloy Leaded

BOB:

We have begun operating our new installation for producing electric furnace carbon and alloy steel with lead under the Inland license.*

I believe it is now in order to let our customers know that Copperweld can furnish leaded steels so that they can take advantage of its economies such as improved machinability, improved production and longer tool life.

One of our friends called yesterday to say that their trial of leaded 4140 annealed showed a machinability rating of 100 compared to 60-70 for the same steel not lead treated. This result while probably better than can be hoped for in every instance indicates the potential value that most users can expect in improved production.

C.W.H.

Send a copy of this memo to our sales offices in:

New York
Chicago
Tulsa
Cleveland
Detroit

Los Angeles
Houston
Seattle
San Francisco
Syracuse

RSC.

*Inland Ledloy License

TOOL STEEL THAT MACHINES 30% FASTER NOW AVAILABLE IN HOLLOW BAR FORM

ADVANTAGES OF GRAPH-MO

MOST STABLE TOOL STEEL MADE
OUTWEARS OTHERS 3 TO 1
MACHINES 30% FASTER
MINIMUM TENDENCY TO PICK UP, SCUFF OR GALL
UNIFORM RESPONSE TO HEAT TREATMENT

PLUS

ADVANTAGES OF HOLLOW BARS

NO DRILLING
FINISH BORING IS FIRST STEP
LESS MACHINING TIME
LESS SCRAP LOSS
MORE PARTS PER TON OF STEEL

EQUALS

ADVANTAGES OF

GRAPH-MO HOLLOW-BAR

NEW GRAPH-MO HOLLOW-BAR COMBINES THE FASTER MACHINING AND LONGER WEAR OF GRAPH-MO WITH THE ECONOMY OF A HOLLOW BAR SECTION

Now manufacturers of ring-shaped tool steel parts can get all the proven advantages of Graph-Mo steel *plus* the economies of a hollow bar section in Graph-Mo Hollow-Bar—a new graphitic tool steel product in hollow bar form developed by the Timken Company.

The center hole's already in Graph-Mo Hollow-Bar. Drilling is eliminated. You save machining time, cut scrap loss, get more parts per ton of steel.

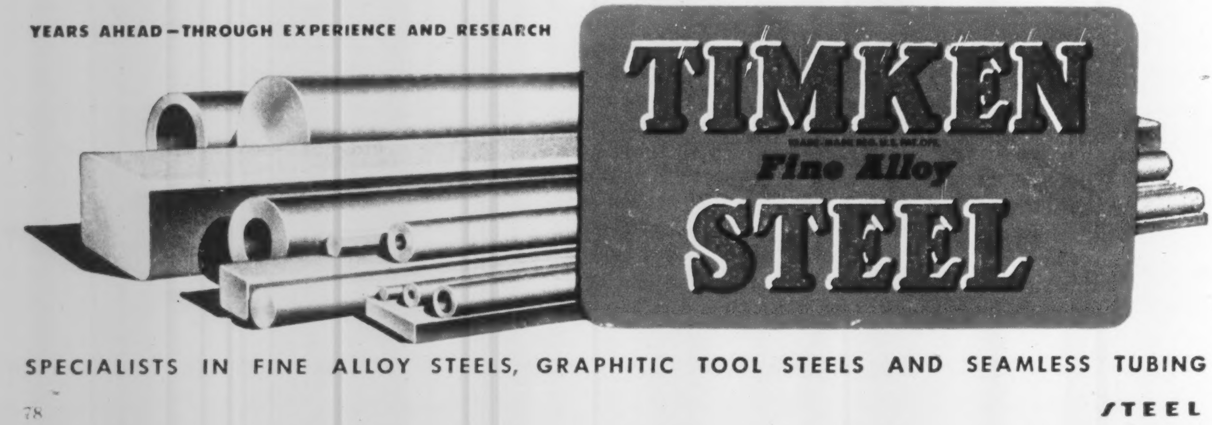
Graph-Mo is a different kind of tool steel. Free graphite in its structure makes it 30% easier to machine! And the combination of free graphite and diamond-hard carbides gives it unusual wear-resistance. Users report it outwears other tool steels an average of 3 to 1!

Stability tests prove Graph-Mo is the most stable tool steel ever made. After 12 years, a typical Graph-Mo steel master plug gage showed less than 10 millionths of an inch dimensional change! It responds uniformly to heat treatment, has a minimum tendency to pick up, scuff, seize or gall.

If you make ring gages, dies or other ring-shaped tool steel parts, make sure you're getting *all* the advantages of Graph-Mo Hollow-Bar. Sizes range up to 16" O.D. with a variety of wall thicknesses. Graph-Mo Hollow-Bar is distributed through A. Milne and Co. and Peninsular Steel Co. warehouses.

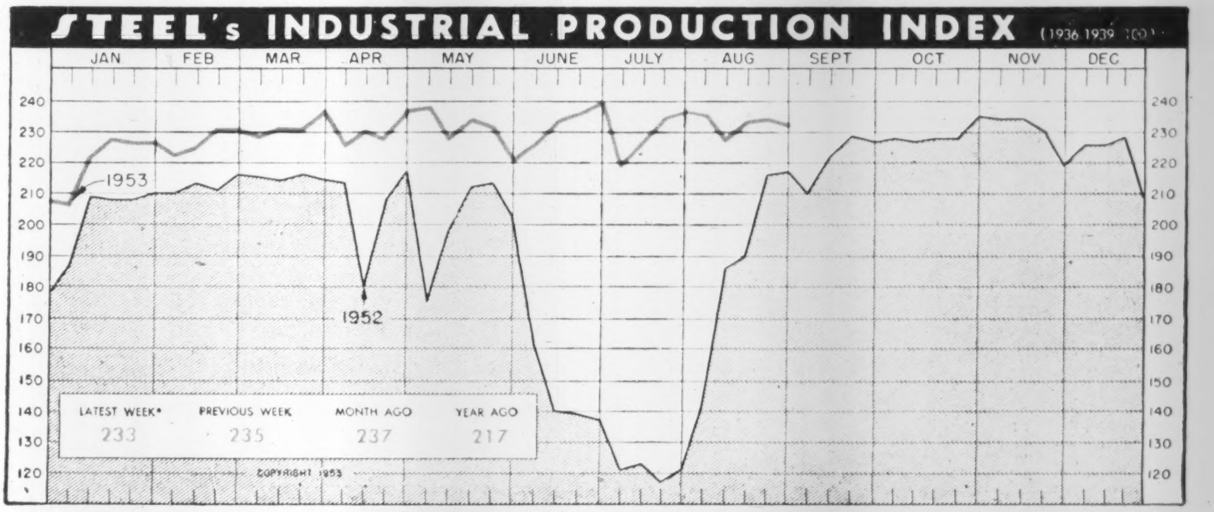
For more information about Graph-Mo Hollow-Bar, write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

The Business Trend



STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939 = 100)

*Week ended Aug. 29

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Slight downtrend in industrial production may obscure dynamic character of our economy, but future needs and potentialities are tremendous

INDUSTRIAL PRODUCTION slipped slightly during the week ended Aug. 29. Reflecting the change, STEEL's index slid two percentage points from the preceding week as it registered 233 per cent of the 1936-1939 average, eight points below the record high for the year.

Responsible for the downturn were the steel and automobile industries, which suffered from different causes. The drop in the steel operating rate to 94.5 per cent of capacity, equaling the year's lowest rate set in the week following the Fourth of July, was caused by the relaxed demand for steel products and the need for repairs to equipment. The reduction in motor vehicle output was due to a lack of Hydra-Matic transmissions for GM cars.

However, neither of these factors is expected to diminish production for long.

Fleet-hoofed Economy . . .

The main thing to consider is that our economy is dynamic, not static. Hobart C. Ramsey, president of Worthington Corp., knows this and so do many other industrialists. Mr. Ramsey feels that our economy is hard to pin down, it is "like the last little pig in the barnyard, who ran so fast he was hard to count." In support of his belief Mr. Ramsey cited the tremendous pressure that the unfilled needs and wants of Americans are exerting on our economy today.

Pent-up Needs . . .

Mr. Ramsey also pointed to the population growth and the pressing need for expanded public works and road building. "The need for new roads is being felt everywhere as the automobile population mounts to the 40-million mark." Moreover, "44 per cent of heavy construction roads in service in 1950 will be worn out by 1960." Other problems which must be solved are the school and hospital needs, the necessity for expanded and adequate water supply systems, the proper modern handling of sewage and irrigation.

Bloom Is Off the Boom . . .

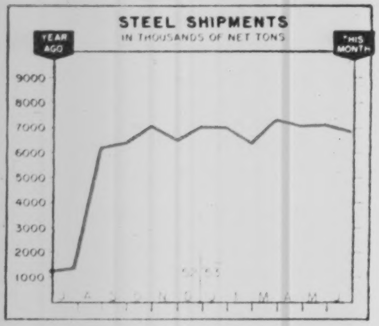
Meanwhile, the economy seems to be waiting. The National Association of Purchasing Agents reports its latest survey shows that the August pickup of industrial business has not been as brisk as many had anticipated. Order backlogs are lower and production schedules are trending downward. The Federal Reserve Board's index of industrial production in July registered 233 per cent of the 1935-1939 average. This level was 7 points less than that of the previous month; plant-wide vacations during July largely caused the loss. The durable goods industries edged off seasonally.

Private Construction Wanes . . .

The business trend in many capital goods industries recently has been disturbing. Total construction contract awards through Aug. 27 are about 8 per cent below those of the record year of 1952, *Engineering News-Record* says. Present weakness can be seen from the fact that in the week ended Aug. 27, private construction awards, at $61.8 million, were less than half the rate of recent weeks.

Follow the Leader? . . .

Falling output in July also took place in the fabricated structural steel industry and in the manufacture of machine tools. The number of contracts closed for fabricated

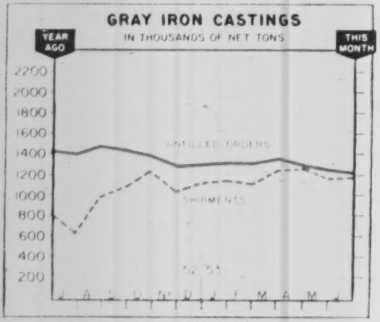


Steel Shipments

Net Tons

	1953	1952	1951
Jan	7,067,636	6,589,193	6,904,688
Feb	6,533,227	6,358,293	5,776,229
Mar	7,436,919	6,890,391	7,105,078
Apr	7,162,460	5,922,173	6,634,510
May	7,209,396	5,947,450	6,938,708
June	6,950,059	1,250,243	6,645,897
July		1,413,642	5,988,574
Aug		6,312,118	6,755,589
Sept		6,542,147	6,207,491
Oct		7,155,611	6,844,093
Nov		6,647,725	6,509,018
Dec		7,105,382	6,411,105

American Iron & Steel Institute

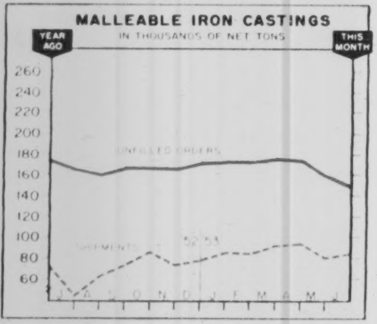


Gray Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan	1,162	1,199	1,333	1,801
Feb	1,136	1,155	1,332	1,766
Mar	1,264	1,172	1,376	1,711
Apr	1,277	1,205	1,306	1,614
May	1,186	1,101	1,272	1,459
June	1,196	835	1,246	1,445
July		636		1,410
Aug		1,002		1,513
Sept		1,119		1,451
Oct		1,233		1,392
Nov		1,061		1,309
Dec		1,112		1,316
Total		13,660		

Source: U. S. Bureau of the Census

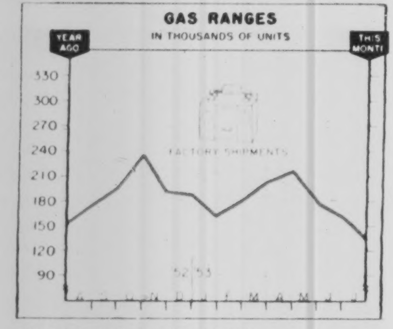


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan	87.2	87.0	174.8	203.0
Feb	86.5	82.9	175.1	193.1
Mar	94.5	81.0	177.8	196.9
Apr	95.9	89.3	174.5	198.2
May	82.1	81.8	160.4	180.4
June	86.5	74.4	151.0	173.4
July		45.3		166.6
Aug		63.7		162.8
Sept		75.9		168.4
Oct		88.4		168.6
Nov		76.1		167.8
Dec		80.6		173.5
Total		926.1		

Source: U. S. Bureau of the Census



Gas Ranges

Shipments in Units

	1953	1952	1951
Jan	169,200	166,100	260,600
Feb	185,900	166,200	254,000
Mar	208,200	185,200	289,800
Apr	220,300	182,300	225,000
May	181,000	162,800	177,800
June	163,500	175,700	128,500
July	137,700	154,200	116,400
Aug		178,600	168,100
Sept		199,600	183,600
Oct		239,700	210,900
Nov		186,400	192,200
Dec		178,600	149,500
Total		2,175,400	2,356,400

Gas Appliance Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Aug 10	Gear Sales	Aug 17	Ranges, Elec	Aug 3
Durable Goods	Aug 10	Indus Production	Aug 17	Refrigerators	Aug 3
Employ, Metalwk	Aug 10	Ironers	Aug 17	Steel Castings	July 20
Employ, Steel	Aug 31	Machine Tools	Aug 3	Steel Forgings	July 20
Fab Struc Steel	Aug 10	Prices, Consumer	Aug 31	Vacuum Cleaners	Aug 3
Foundry Equip	July 27	Prices, Wholesale	Aug 24	Wages, Metalwk	Aug 31
Freight Cars	Aug 24	Pumps	Aug 24	Washers	Aug 17
Furnaces, Indus	Aug 24	Radio, TV	Aug 31	Water Heaters	July 27

structural steel in July totaled 213,638 tons, 8 per cent below the preceding month, the second lowest month for the year, and less than in the same month in 1952, according to the American Institute of Steel Construction. However, bookings for the first seven months of the year were 20 per cent over those for the same period of 1952. Accordingly, shipments during the first seven months were also ahead of the same period last year, and as a result the order backlog at 2,133,517 tons is less than the figure for the comparable seven months in the banner year of 1952.

Below the '52 Pace . . .

In the machine tool industry the index for new orders in July totaled 246.8 per cent of the 1945-1947 average, the National Machine Tool Builders' Association reports. This is the lowest monthly standing for the year, and bookings this year are substantially below the same 7 months of 1952. The industrial furnace business through July this year has received orders for $38,914,285 worth of equipment, $6 million below the same period of 1952, the Industrial Furnace Manufacturers Association says. In July, bookings for fuel-fired processing furnaces amounted to $2,017,235, the lowest total for any month this year. But, orders for electric processing furnaces, at $2,245,795, were the highest monthly awards of the year and reflect the growing market that these furnaces are exploiting.

Railroads Slow Down . . .

The current situation in loadings of railroad revenue freight has fallen short of expectations. Loadings through the week ended Aug. 22 totaled 25,096,352 cars, more than 1.1 million cars above last year but also 1.1 million carloads below 1951, and in 1951 there was no steel strike. Moreover, during the latest week, all districts except the central western reported decreases from the corresponding week in 1952, the Association of American Railroads relates. Meanwhile commercial airlines continue to exert ever more pressure for freight. United Air Lines says that its July air express traffic was the company's best. Their planes racked up

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	94.5	96.0	98.5
Electric Power Distributed (million kwhr)	8,540	8,432	7,646
Bitum. Coal Output (daily av.—1000 tons)	1,596	1,591	1,825
Petroleum Production (daily av.—1000 bbl)	6,625[1]	6,619	6,284
Construction Volume (ENR—millions)	$214.3	$259.0	$353.9
Automobile, Truck Output (Ward's—units)	155,362	163,635	122,659
TRADE			
Freight Car Loadings (unit—1000 cars)	822[1]	817	727
Business Failures (Dun & Bradstreet, no.)	182	122	132
Currency in Circulation (millions)[3]	$30,105	$30,143	$29,129
Dept. Store Sales (changes from year ago)[3]	0%	0%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$15,714	$17,359	$15,069
Federal Gross Debt (billions)	$273.0	$272.7	$263.0
Bond Volume, NYSE (millions)	$10.6	$10.2	$16.3
Stocks Sales, NYSE (thousands of shares)	6,210	5,043	4,533
Loans and Investments (billions)[4]	$79.3	$79.8	$75.3
U. S. Gov't. Obligations Held (billions)[4]	$32.1	$32.3	$32.4
PRICES			
STEEL's Finished Steel Price Index[5]	189.38	189.38	181.31
STEEL's Nonferrous Metal Price Index[6]	206.7	206.8	223.2
All Commodities[7]	110.7	110.8	112.2
Commodities Other Than Farm & Foods[7]	114.7	114.8	113.0

*Dates on request. [1] Preliminary. [2] Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3] Federal Reserve Board. [4] Member banks, Federal Reserve System. [5] 1935-1939=100. [6] 1936-1939=100. [7] Bureau of Labor Statistics Index, 1947-1949=100.

a total of 780,000 ton miles of air express during the month.

Autos Slow Down . . .

During the week ended Aug. 29, outturn of cars and trucks from Canadian and American plants totaled 155,362 units, according to *Ward's Automotive Reports*. This production was more than 8000 units less than that in the previous week and was part of the declining August output which resulted in domestic production in the first eight months of the year falling behind the record set in the same period in 1950.

Meshing More Slowly . . .

Although the decline in automobile production has an effect on the gear industry, the reduction in defense orders is largely the reason for the drastic drop in volume of gear manufacturers. The gear industry is returning to something like peacetime demands. Volume for the industry during July is less than it has been since near the beginning of the Korean war. The index of the American Gear Manufacturers Association pointed to 120.7 per cent of the 1947-1949 average in July, but further declines should not be nearly as severe as that which already has taken place in the industry.

Softer Prices Ahead . . .

Another large item that is tending to level off or soften is prices. The NAPA survey shows this is due partially to more shopping around and ordering in smaller quantities. In line with this appraisal, the Consumer Price Index of the Department of Labor rose only 0.2 per cent from June to July. The index in July stood at 114.7 per cent of the 1947-1949 average.

Trends Fore and Aft . . .

The rise in consumer prices in July brought about a 0.7 decline in the purchasing power of the dollar. Its value in July was 55.2 cents, reports the National Industrial Conference Board . . . July sales of retail stores amounted to $14.2 billion, 6 per cent above a year ago, according to the Department of Commerce . . . Shipments of gas ranges totaled 137,700 during July, lowest month for the year, but shipments during the first seven months were 6.1 per cent greater than in the same period in 1952.

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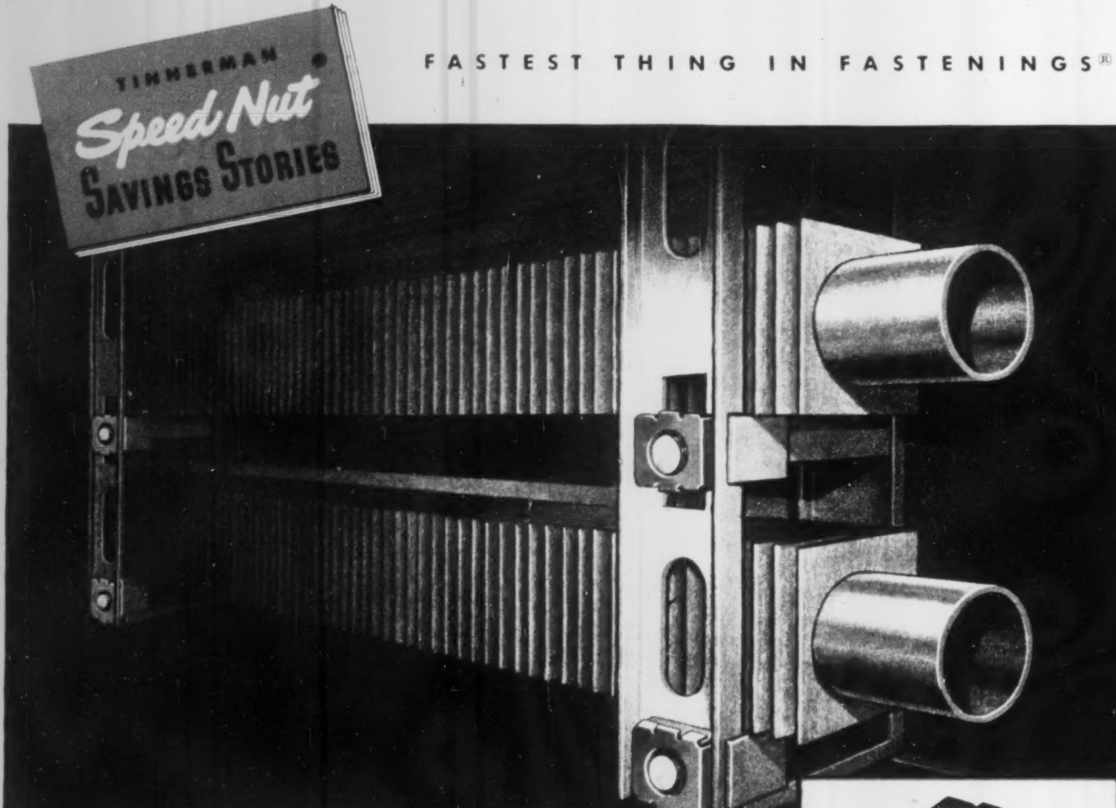

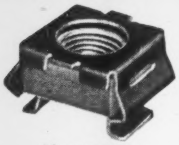

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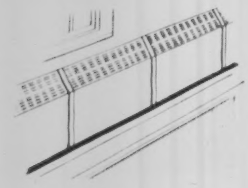

Reducing the cost of assembling enclosures to Airfoil Finned heaters was a double problem for Engineers at Radiant-Ray Radiation, Inc., New Britain, Conn. Easier ways of installing the units had to be considered also. On both counts SPEED GRIP nut retainers turned the trick over all other methods! These SPEED NUT brand fasteners saved 78% in production time, machining costs, and materials . . . permitting the use of less costly channel, eliminating punching and tapping of holes on wall hangers, and doing away with the longer flange on the expansion cradle hanger.

One leading contractor has this to say about easier, faster custom-fitting and installing: "Adjusting and levelling are now a 'snap' for us due to these SPEED GRIPS." Your Tinnerman representative is trained to help you spot savings opportunities like this on your product assemblies. See him soon!

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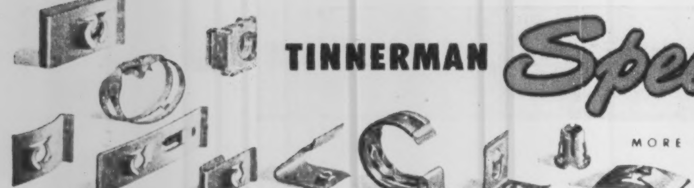
In Canada: Dominion Fasteners, Ltd., Hamilton, Ont. *In Great Britain:* Simmonds Aerocessories, Ltd., Treforest, Wales. *In France:* Aerocessoires Simmonds, S.A.—7 rue Henri Barbusse, Levallois (Seine).



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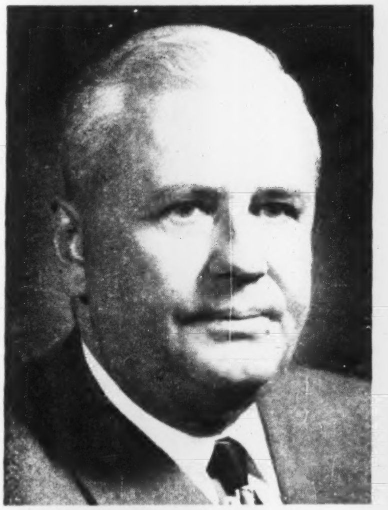
Men of Industry



EUGENE B. FILES
. . . sales mgr. for Union Drawn Div.

WILLIAM H. YECKLEY
. . . new post at Youngstown Sheet & Tube

E. H. H. GRAF
. . . Detroit Broach v. p.-sales

Eugene B. Files was appointed manager of sales for **Union Drawn Division**, Massillon, O., Republic Steel Corp. He succeeds the late **Fred C. Young.** Mr. Files assumes this position after 33 years with Republic and predecessor companies. Since 1930 he has been with Republic's Detroit sales office, in recent years serving as assistant district sales manager.

E. Courtney Sorrells was appointed division superintendent of steel production at the Gary, Ind., Works of **U. S. Steel Corp.** He succeeds **Edgar B. Speer,** made assistant general superintendent at the corporation's Duquesne, Pa., plant.

Hills-McCanna Co., Chicago, appointed **Allan V. DeMarco** general manager of its foundry division. He has been general manager of Exeter Brass Co., division of Bridgeport Brass Co.

Judson Neff was named manager of all manufacturing and production operations in the Pittsburgh and Midland, Pa., plants, as well as manager of the engineering and estimating departments of **Mackintosh-Hemphill Co.**

Theodore C. Smolinski was appointed director of technical service for **Wagner Bros. Inc.,** Detroit.

William H. Yeckley assumes the new position of general manager of steel operations for **Youngstown Sheet & Tube Co.,** Youngstown. For the last three years he has been directing steel operations in both the Youngstown and Chicago districts, holding the title of assistant to the vice president in charge of operations.

Clary Multiplier Corp., San Gabriel, Calif., appointed **Elmer Harrison** production manager-tool and instrument manufacturing division and **Robert Geffs** production manager of ammunition manufacturing. **Rollo Asmussen** is production manager-business machines.

C. H. Menge, vice president, Murray Corp. of America, was elected executive vice president of **Eljer Co.,** a subsidiary with plants at Ford City, Pa., Salem and Marysville, O.

Charles C. Reiff, chief engineer, Rockwell Mfg. Co.'s Barberton, O., plant, was promoted to chief engineer of the company's **Delta Power Tool Division** at Bellefontaine, O.

Ekco Products Co. named **Jerome J. Jason** manager of its plant at Byesville, O. He has been an executive of this plant since 1949 and since 1952, general superintendent.

E. H. H. Graf is the new vice president-sales at **Detroit Broach Co.,** Detroit, which he joined early this year as sales manager. Associated with the broaching industry for many years, he has been Detroit representative for the last 14 years for Oilgear Co.

Albert L. Smith, vice president, **Continental Copper & Steel Industries Inc.,** New York, was named general manager of the new Walsh Portland Division at South Portland, Me., recently formed to fabricate steel pipe and equipment under an Atomic Energy Commission contract. Mr. Smith has been general manager of the corporation's Walsh Holyoke Boiler Works Division, and is replaced in that position by **John B. Knowlton,** who has also been made a vice president.

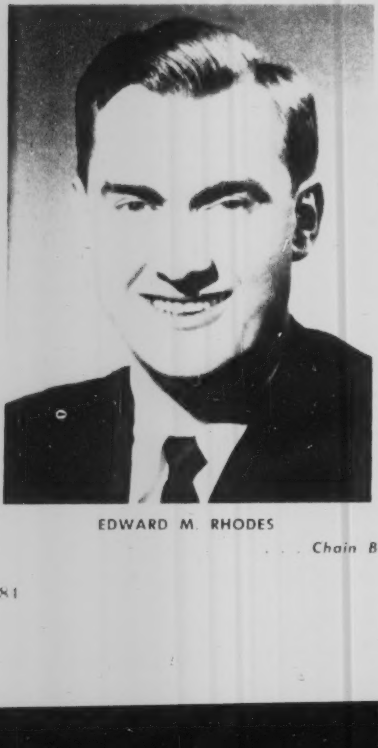
Eaton Mfg. Co.'s foundry division, Vassar, Mich., promoted **S. David Tyler** to assistant general manager, **Paul W. Olson** to resident manager, **Howard R. Johnson** to factory manager, **Ralph F. Evert** to assistant sales manager and **Daniel J. Schindehette** to plant controller.

Dr. Harry A. Schwartz, for many years manager of research for **National Malleable & Steel Castings Co.,** Cleveland, retires from full-time work Sept. 15. His services will be available to the company, however, in a newly created position of assistant to the vice president in charge of production. **B. C. Yearley,** assistant manager, Chicago Works, transfers to Cleveland as director of applied research, process control and supervisory training.

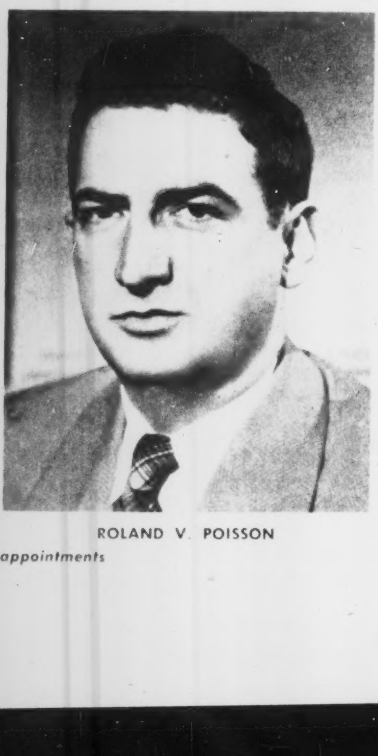
Joseph H. Pargeter now heads the steel forge operations of **Willys Motors Inc.,** Toledo, O. He was general manager, Willys Aluminum Forge Division in Erie, Pa., and has been with Willys more than 30 years.

A. B. Capron, chief engineer, was named assistant works manager in charge of the tube mills and engineering, and **Newell Hamilton** manager of steel operations in the tubular products division, **Babcock & Wilcox Co.,** Beaver Falls, Pa.

Chain Belt Co., Milwaukee, promoted **Edward M. Rhodes** to division manager, Baldwin-Duckworth Division. **Roland V. Poisson,** formerly assistant sales manager, becomes sales manager of that division. Mr. Rhodes succeeds **George D. Gilbert,** resigned. Mr. Gilbert, with the organization for 35 years, also served as secretary and a director of the company. **William C. Messinger,** assistant to the manager, construction machinery division, now fills the position of secretary. He has been assistant secretary for the last year and until recently was manager of the company's ordnance division.

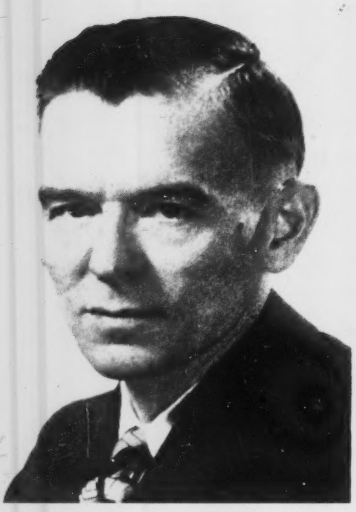


EDWARD M. RHODES



ROLAND V. POISSON

. . . Chain Belt appointments



S. M. JENKS

JOHN H. ELLIOTT

. . . promotions at U. S. Steel Corp.

S. M. Jenks was appointed to the newly created post of assistant executive vice president of operations, **United States Steel Corp.,** Pittsburgh. He is succeeded as vice president, operations-steel by **John H. Elliott** who, in turn, has been replaced by **E. H. Gott** as general manager of steel operations.

William H. Griffith was elected vice president, **Pacific Wire Works Co.,** Seattle. He has been sales manager and continues in charge of sales in his new position.

Charles E. St. Thomas was named manager-advertising and sales promotion at the **Carboloy Department,** General Electric Co., Detroit. He succeeds the late **E. C. Howell. Eugene J. Lenar** joins Carboloy as an engineer in the metallurgical process and quality control unit for permanent magnet materials at the Edmore, Mich., plant.

Darwin S. Weist was made chief engineer, **St. Paul Hydraulic Hoist Division,** Minneapolis subsidiary, Gar Wood Industries Inc.

Tower Iron Works, Providence, R. I., appointed **Waldo W. Smith** general manager succeeding the late **Howard R. Chase.** Mr. Smith has been chief engineer since 1947.

Mannesmann-Meer Engineering & Construction Co. appointed **A. L. Thurman** executive vice president. His headquarters will be at Easton, Pa.

James H. Hamilton was made sales manager, **Sullivan Varnish Co.,** Chicago. Identified with the metal finishing and industrial coating fields for 25 years, he will direct the sales activity of both the parent company and its new affiliate, Sullivan Chemicals Division.

Arthur F. Vinson was elected a vice president of **General Electric Co.** He will serve as manufacturing vice president and as general manager of manufacturing services division with headquarters in New York. He succeeds **N. M. DuChemin** who will serve as vice president on special assignments.

Austin Goodyear, general manager of the rubber and conveyor divisions of **Hewitt-Robins Inc.,**

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FAWICK Type E Air-Ring Clutch

There is a sound reason why so many of the finest industrial machines incorporate FAWICK AIRFLEX Clutches and Brakes—*they guarantee top performance.* Fawick units are essential components, vital to both manufacturers and users.

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INDUSTRIAL CLUTCHES AND BRAKES

A. J. JONES
. . . Landis Tool chief engineer

ROBERT B. DUTHIE
. . . gen. mgr., Modern Process Plating

LAURIN D. WOODWORTH
. . . gen. supt. at Youngstown for USS

Stamford, Conn., was elected a vice president of the company.

Landis Tool Co., Waynesboro, Pa., appointed **A. J. Jones** as chief engineer. He has been in charge of sales engineering.

Assistant managers appointed by **Elliott Co.**, Jeannette, Pa., include **E. A. Humble** at Boston, **M. C. Seeman** at Cleveland and **O. M. Sievert** at Kansas City.

H. H. Marsales was named general traffic manager, eastern division, **Colorado Fuel & Iron Corp.** He continues to be located at the Buffalo plant where he will direct the operation of all traffic departments of all plants at Wickwire Spencer Steel Division, American Wire Fabrics Corp. and John A. Roebling's Sons Corp.

Named as assistant to the vice president, central district staff, **Westinghouse Electric Corp.,** is **F. G. Hickling,** who is succeeded as manager of the Cleveland branch office by **E. S. Rehagen.** Mr. Hickling continues to be located in Cleveland.

John O'Connor III was named assistant sales manager of the Cleveland district office of **Copperweld Steel Co.,** Warren, O., division.

Gordon E. Dean, retired chairman of the United States Commission on Atomic Energy, was elected a director of **Fruehauf Trailer Co.,** Detroit.

Robert B. Duthie was appointed general manager, **Modern Process Plating Co.,** Cleveland, a subsidiary of Viking Air Conditioning Corp. where he has been serving as administrative engineer.

Packard Motor Car Co., Detroit, elected **Ray P. Powers** vice president to succeed **George C. Reifel,** retired. Mr. Powers assumes charge of all manufacturing operations. Since 1949 he has been with Lincoln-Mercury Division, Ford Motor Co., where he was general manufacturing manager. Before that he was with General Motors Corp. from 1927, last at the Pontiac Division.

Harry C. Fleming Jr. was appointed Youngstown area representative for **Jones & Laughlin Steel Corp.'s** warehouse division.

Oneida Products Corp., Canastota, N. Y., appointed **Arthur G. Lindley** assistant secretary and assistant treasurer to succeed **John R. Davis,** and **Charles B. Miller** as comptroller. **Lynn Parks** becomes sales engineer of the corporation.

James E. Gathings and **Jon Chiesl** were appointed power transmission and conveying chain sales engineers for the Dallas and Chicago district offices of **Whitney Chain Co.**

Reed-Prentice Corp., Worcester, Mass., appointed **Jerold L. Welch** chief engineer.

Laurin D. Woodworth was made general superintendent and **Oscar Pearson** assistant general superintendent at the Youngstown district works of **United States Steel Corp.**

Robert E. Dillon, president, Lake Erie Engineering Corp., was elected a director of **Buffalo-Eclipse Corp.,** North Tonawanda, N. Y. Promotions in the latter firm's division, Buffalo Bolt Co., include: **Karl L. Miller,** assistant general sales manager; **P. G. Lemke,** sales promotion manager; **D. T. Sinclair,** assistant to general sales manager; and **P. G. Cumming,** manager, distributor sales.

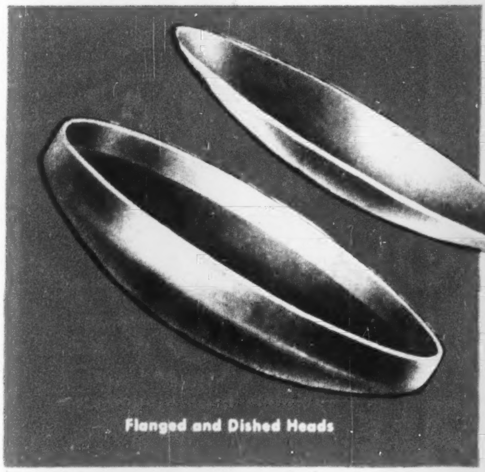
Theodore H. Booth, recently appointed general manager, bonded products and grain division, **Carborundum Co.,** Niagara Falls, N. Y., was elected vice president.

Follansbee Steel Corp. appointed **John E. Russell** district sales manager of its Milwaukee branch office succeeding **H. H. Wherry,** retired.

Robert M. Barnum was appointed sales engineer for **Butterfield Division,** Union Twist Drill Co. He will represent the division in the southern Michigan territory with headquarters in Detroit.

Sipi Metals Corp., Chicago, announced election of **Edward M. Pinsof** as executive vice president. **Maury E. Lippert** became vice president in charge of sales, and **Joseph Levin,** vice president in charge of

heads---you win



Flanged and Dished Heads

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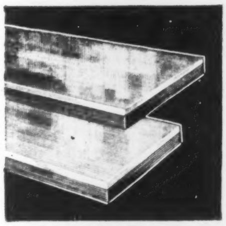
Whatever your needs in flanged and dished heads, you're a winner every time when you call for heads by Claymont.

We can always meet your most exacting specifications because with us the spinning of flanged and dished heads is more than just a job—it's an art into which we put the most painstaking care and specialized know-how.

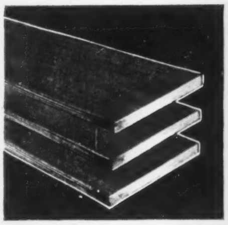
Our flanging department can supply you with flanged and dished heads in diameters from 9 inches to 19 feet and in gauges from 3/16-inch to 6 inches. Made in carbon steel, alloy steel or with stainless steel cladding. We are also prepared to handle head forming operations on both ferrous and non-ferrous metal circles supplied by the customer.

Other Claymont products include Stainless-Clad Steel Plates, Alloy and Carbon Steel Plates, Large Diameter Welded Steel Pipe.

Write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.



Stainless-Clad Steel Plates



Alloy and Carbon Steel Plates

Large Diameter Welded Steel Pipe

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado
PACIFIC COAST DIVISION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit
New Orleans • New York • Philadelphia
CANADIAN OFFICES: Toronto • Winnipeg • Edmonton • Vancouver

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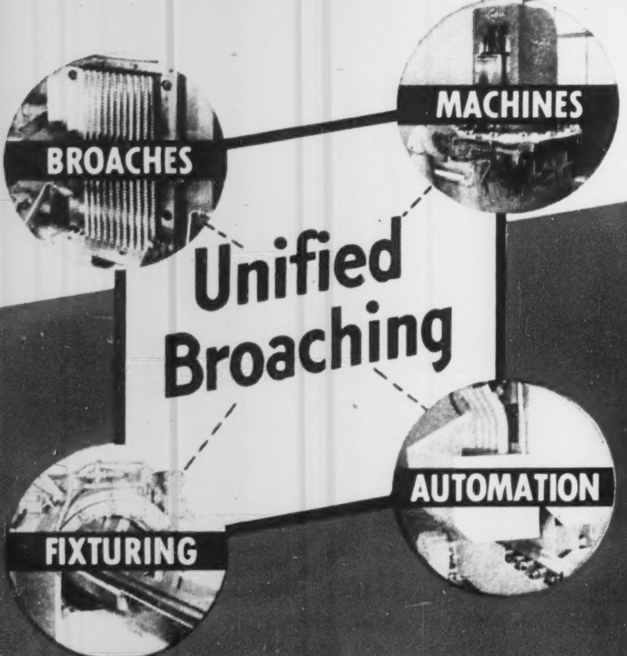
PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I



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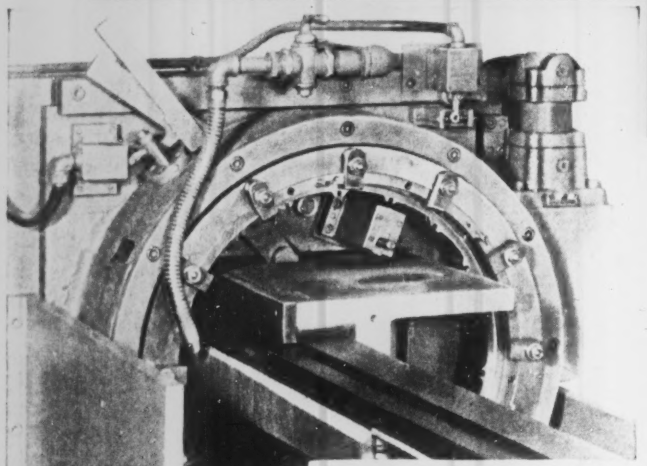

2 Colonials Broach JET BLADE SUPPORTS

Heat and corrosion resistant steel 22¾" I.D. jet engine blade supports, are broached on internal contours on two 10-ton 90-in. stroke standard Colonial horizontal machines at 3 per hour. 18 passes are required per machine. Metal approximately ¾" deep, 3½" wide, and ½" thick is broached in two passes.

Machines, broaches, fixtures, etc., were all designed by Colonial as a UNIFIED BROACHING INSTALLATION.

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COLONIAL

BROACH CO. DETROIT 13

DAVID W. HOPKINS
. . . consultant for S. Morgan Smith Co.

production. **Joseph P. Antonow,** general counsel, was elected a vice president.

S. Morgan Smith Co., York, Pa., appointed **David W. Hopkins** chief consultant for its valve division. Mr. Hopkins is executive vice president of R-S Products Corp., Philadelphia, subsidiary.

W. L. Pinner was made manager of **Houdaille-Hershey Corp.'s** process development division, Detroit. **William J. Pierce** becomes supervisor of process development, in charge of research and development activities in the division.

Henry W. Fritz was made midwest sales manager for the Quijada tool division, **Gaines-Collins,** Los Angeles.

MERRICK LEWIS
. . . president of Alliance Machine Co.

Merrick Lewis assumes the presidency of **Alliance Machine Co.,** Alliance, O., succeeding **H. A. Fennerty,** now board chairman. Mr. Lewis is also vice president, Lewis Engineering & Mfg. Co.

Charles E. Schmitt, former machine and tool buyer of the Cleveland Cadillac tank plant, was named Ohio sales engineer for **Ace-Central States Machine Tool Co.,** Detroit. He has offices in the Carnegie Hall building, Cleveland.

John Mestrezat became a vice president of **J. N. Fauver Co. Inc.,** Detroit.

Arthur M. Rothman was made district sales engineer of **American Silver Co. Inc.,** Flushing, N. Y. He will represent the company in metropolitan New York and Connecticut.

Wall Wire Products Co., Plymouth, Mich., announced appointment of **Maxwell M. Wachowiak** as assistant to the president.

Kenneth I. Pempsell was elected president and a director of **Stellrecht Corp.,** Buffalo. The post has been vacant since the death of **Conrad Stellrecht** in 1947.

Frank R. Benedict was made staff engineering manager on the staff of H. E. Seim, vice president and general manager of **Westinghouse Electric Corp.'s** Sturtevant Division and air conditioning division at Hyde Park, Mass., and Bryant Electric Co., subsidiary at Bridgeport, Conn.

Patrick H. Norton joined the sales engineering staff of **Frederic B. Stevens Inc.** to cover the western Michigan territory with headquarters in Grand Rapids.

W. L. Neely and **John T. Farrell** were appointed assistant controllers at **Rockwell Mfg. Co.,** Pittsburgh. **Calvin W. Tittsler** was made eastern and southern regional sales manager for Deluxe Saw & Tool Co., subsidiary at High Point, N. C.

Midland Industrial Finishes Co., Waukegan, Ill., appointed **R. A. Lemersal** assistant sales manager.

John F. Scherer became dealer sales manager of the **Dudco Division,** New York Air Brake Co., Hazel Park, Mich.

OBITUARIES . . .

Alexander G. Bryant, 59, president, **Bryant Machinery & Engineering Co.,** Chicago, died Aug. 25. He was vice president, **Cleereman Machine Tool Co.** He was also a past president of National Machine Tool Builders' Association and of American Machine Tool Distributors' Association, and during World War II served on a board advising the government on machine tools.

Samuel S. Buckley, president, **Onondaga Steel Co.,** Syracuse, N. Y., died Aug. 22. He formerly was associated with Bethlehem Steel Co. and Halcomb Steel Co.

Carl W. Grimm, 48, executive vice president, **Henry Pratt Co.,** Chicago, died Aug. 23.

A. Albert Klein, 64, assistant director of research and development at **Norton Co.,** Worcester, Mass., died Aug. 25.

Fred A. Poor, 83, board chairman, **Poor & Co.,** Chicago, died Aug. 26.

Eric H. Lichtenberg, 68, patent research engineer and former chief engineer, **Koehring Co.,** Milwaukee, died Aug. 28.

Lee C. Barthold, 54, purchasing agent for the shipbuilding division, **Bethlehem Steel Corp.,** died Aug. 26 at his home in Greenwich, Conn.

John A. Schultz, purchasing agent, **Ferguson & Lange Foundries Inc.,** Chicago, died Aug. 26.

Edward W. Utz, 70, vice president, **Columbia Carbon Co.,** Dayton, O., died Aug. 21.

Carl H. Kinzig, 62, president, **Kinzig Tool Co.,** Cleveland, died Aug. 30.

Alfred Heller, president, **Heller Steel Heat Treating Co.,** New York, died Aug. 26.

More Power for Smith

S. Morgan Smith Co.'s new $3.5 million plant will be devoted primarily to making turbines

CORNERSTONED by prospects of another decade of growth in electric power capacity and further rise in industrial use of electricity, expansion plans of S. Morgan Smith Co., York, Pa. are laid on solid ground.

Spotlight on Production—Sporting a $40-million backlog and expecting to hit a sales peak of $20-$24 million this year, according to Burwell E. Smith, vice president, the company last week moved into a $3.5-million, 100,000-square-foot plant with plenty of elbow room for further growth on a 136-acre site outside York.

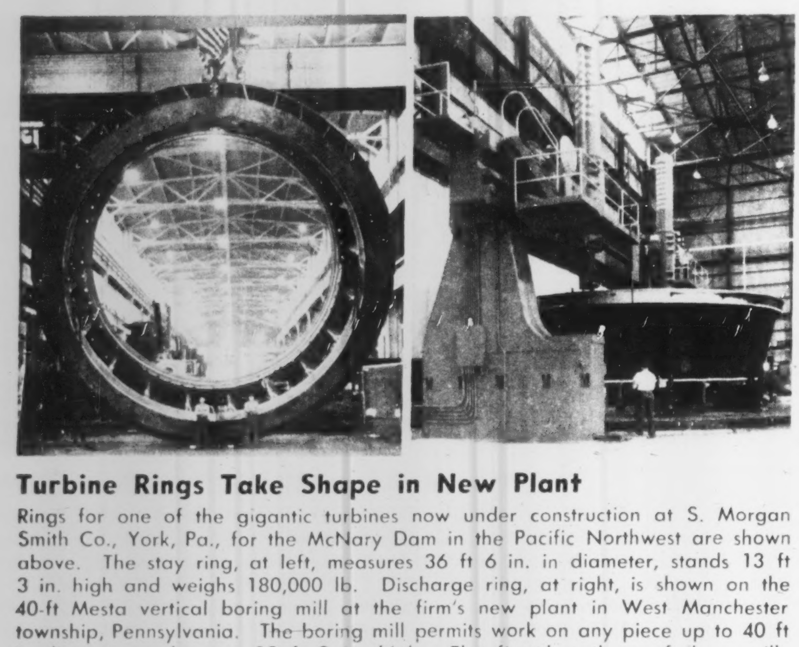
About 90 per cent of the new plant will be devoted to manufacture of big hydraulic turbines, the company's major activity, says Earl E. Hilker, assistant to the president. Since 1876, more than 9500 Smith turbines, with capacity of over 15.4 million horsepower, have been built or are abuilding. About 15 per cent of these are for export markets. Company today employs over 1000 and utilizes half a million square feet of working space.

Smith also makes related equipment for power plants such as gates and valves, adjustable blade pumps and turbines, ship propellers and cone and butterfly valves for water systems and process industries. Listed among its big jobs is the world's largest axial flow compressor for NACA's supersonic wind tunnel in Cleveland.

Flexible Operations—In the spacious new plant, which fabricates plate from ¼ to 6 inches, welding and plate forming operations on large imbedded parts for hydro projects can be performed with maximum flexibility, as they can be moved between departments and stations without disassembly. Turbines up to 280 inches and inlet scroll cases up to 30 feet in diameter can be accommodated easily. In process now are units of a 111,300-horsepower turbine for the McNary dam in Oregon.

Plant was completed one year after ground was broken. It was built by Baltimore Contractors Inc. and is served by the Western Maryland Railroad. Basic construction is structural steel framing with transite siding and poured gypsum roof slab. Heat is provided by two 500-horsepower, low-pressure, oil-fired steam generators and distributed by 22 blower-type unit heaters. Combination incandescent-mercury lighting system allows floor illumination of 35 foot-candles.

Time Savers—Materials handling is an especially noteworthy feature. The 90-foot-wide bays for overhead cranes (one is 650 feet long with 30 foot-clearance under crane hook and the other 400 feet long with 50 foot clearance) simplify the movement of huge weldments. A 100-ton, two 25-ton and one 30-ton outside Shaw box cranes and two 10-ton Whitings will be utilized. New machinery installed includes a 40-foot Mesta vertical boring mill (Smith has three of the eight units approximately this size in the country) and a 4.5 in. spindle Carleton automatic. In the company's York plant is a 42-foot vertical boring mill, largely designed and built in the company's shops.



Turbine Rings Take Shape in New Plant

Rings for one of the gigantic turbines now under construction at S. Morgan Smith Co., York, Pa., for the McNary Dam in the Pacific Northwest are shown above. The stay ring, at left, measures 36 ft 6 in. in diameter, stands 13 ft 3 in. high and weighs 180,000 lb. Discharge ring, at right, is shown on the 40-ft Mesta vertical boring mill at the firm's new plant in West Manchester township, Pennsylvania. The boring mill permits work on any piece up to 40 ft in diameter and up to 13 ft 3 in. high. The firm has three of these mills

Opens Chrome Plating Plant

A chrome plating plant was opened in Green Bay, Wis., under the name of Ultra Plating Corp. E. W. Forkin heads the concern.

Tool Firm Appoints Agents

Beaver Tool & Engineering Corp., Royal Oak, Mich., appointed as its representatives: Barney Machinery Co., Pittsburgh; E. W. Brock Co., Cincinnati; Coast Tool Co., Oakland, Calif.; W. S. Murrian Co., Knoxville, Tenn.; and A. S. Guile, Dayton, O.

Bassick Buys Product Line

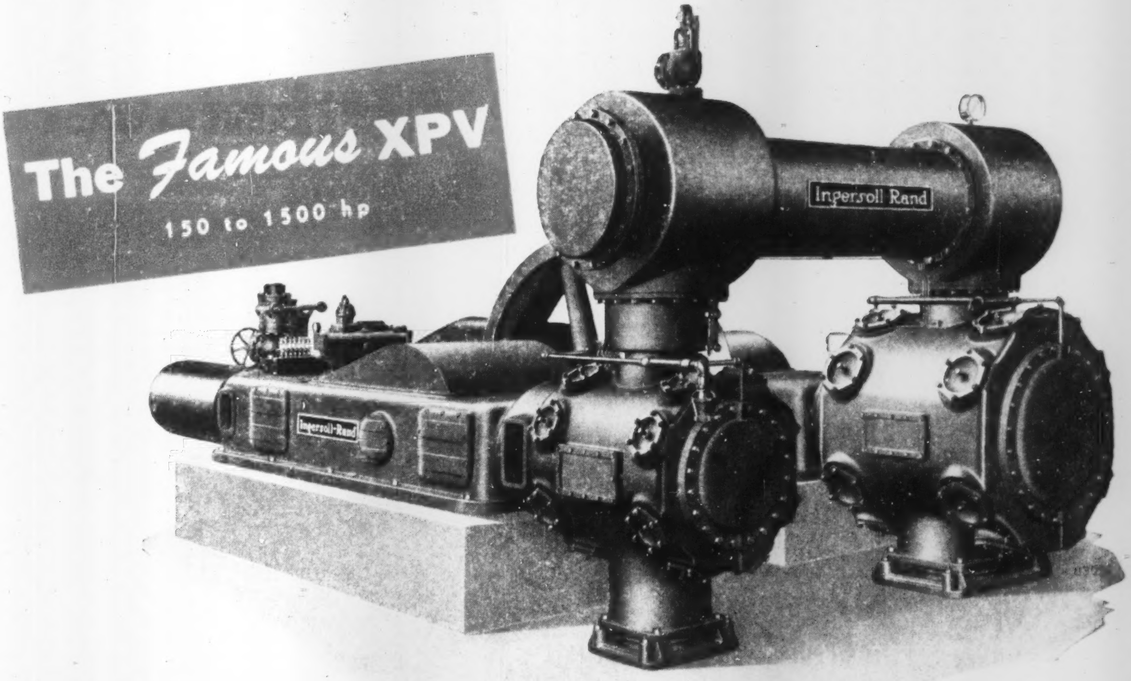
Bassick Co., Bridgeport, Conn., a division of Stewart-Warner Corp., Chicago, purchased the industrial caster and wheel line now manufactured by Kilbourne & Jacobs Co., Columbus, O. Trucks and other materials handling equipment manufactured by Kilbourne & Jacobs are being sold separately.

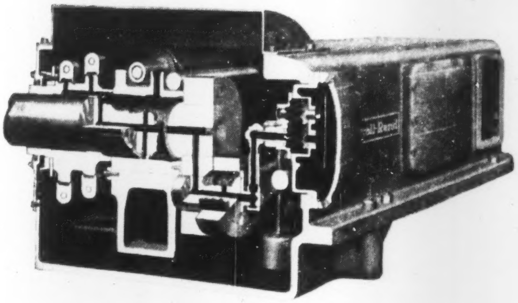
Westinghouse Buys Plant

Westinghouse Electric Corp., Pittsburgh, purchased the government-owned plant at Lansdowne, Md., which the company has operated under lease since its construction in 1942. The plant is a large scale producer of electronic equip-

(Please Turn to Page 93)

Sets the Standard for STEAM-POWERED COMPRESSORS





This cross-section through one of the main bearings of the new XPV shows its unique lubrication system. The combination oil-pump drive and distribution system (patented) supplies oil through drilled passages directly to the crankpin and main bearings, valve-gear eccentrics, and crossheads.

All of the oil discharged from the pump passes through a fine-mesh bronze filter before entering the distribution system. The oil stays clean and bearing surfaces are protected.

Because the frame is sealed, oil stays in; and dust and dirt stay out. The oil in the crankcase keeps clean, and the smooth contours of the frame make it easier to keep clean outside.

Ever since the first steam-powered compressor of "4-corner" construction was built by Ingersoll-Rand in 1900, I-R "steamers" have been the standard of comparison. Through the following years, other models introduced such precedent-breaking improvements as: balanced piston-valve riding cut-off steam end, double-crosshead and tie-rod construction, and Channel Compressor Valves.

The new XPV sets a truly new standard of comparison. Many of the outstanding features of the old XPV have been retained because of their advantages. Many improvements have been introduced to make a superior compressor.

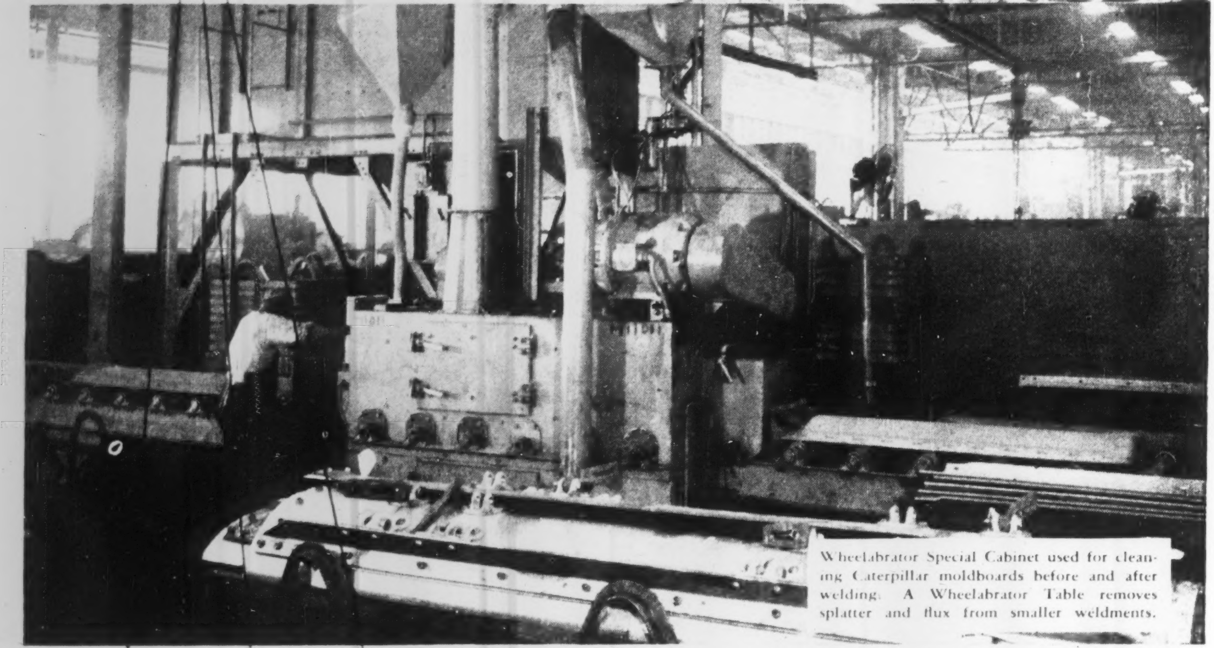
One of the outstanding features of the new XPV is its full-floating bearings. Main, crankpin, and crosshead-pin bearings are all free to rotate; rubbing speeds are reduced, and bearing loads and lubricant are distributed evenly around the entire bearing surface both inside and out. The wear on these non-adjustable bearings is almost non-existent, and the sealed, dust-tight frame need be opened only for inspection.

Part by part, and as a complete unit, the new XPV has been designed to compress air or gas with the greatest over-all efficiency. For further information ask the nearest I-R branch office for Bulletin 3444-A. Call upon Ingersoll-Rand engineers to prove why you should use this new XPV, the new standard of comparison.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 578-1

CATERPILLAR TRACTOR CO.
finds WHEELABRATOR®
AIRLESS BLAST CLEANING
invaluable
in building giant earthmovers



Wheelabrator Special Cabinet used for cleaning Caterpillar moldboards before and after welding. A Wheelabrator Table removes splatter and flux from smaller weldments.

1. **Provides a thoroughly clean surface for welding**
2. **Eliminates costly grinding, buffing and polishing.**
3. **Earth scours readily over a Wheelabrated surface.**

In building equipment like the giant Caterpillar earthmovers, welds that will take terrific punishment are a requisite. To obtain these tight welds, a thoroughly cleaned surface is of prime importance.

Wheelabrator airless blast cleaning not only provides this welding surface but its rapid, thorough cleaning action gives Caterpillar additional benefits like these: Welding flux and splatter are uniformly removed from weldments of all sizes and types. Costly manual grinding, buffing and polishing operations were eliminated when it was discovered that earth would scour more readily across the face of the Wheelabrated scraper blades and moldboards. Castings and heat treated parts are cleaned at low cost at production line speeds.

For your metal cleaning and finishing requirements, investigate the Wheelabrator. Write today for full details.

American

WHEELABRATOR & EQUIPMENT CORP.

509 S. Byrkit St., Mishawaka, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT

(Continued from Page 90)

ment and is now producing induction heating equipment, microwave equipment, railroad radios, power line carrier equipment, radio transmitters, and certain radar components.

Chain Belt Acquires Firms

Chain Belt Co., Milwaukee, purchased Shafer Bearing Corp., Downers Grove, Ill., for the purpose of broadening the markets for its power transmission products. The new addition will operate as the Shafer Bearing Division of Chain Belt Co. and will continue to make industrial roller bearings. R. P. Tennes, former president of Shafer Bearing, is now manager of the division.

Chain Belt also acquired controlling interest in Crothers Engineering Ltd., Toronto, Ont., a distributing organization for construction machinery. The new company will be known as Canadian Chain Belt Ltd. Facilities of the Canadian firm include a machine shop and a structural steel fabricating shop.

Fastener Industry Honors Knapp

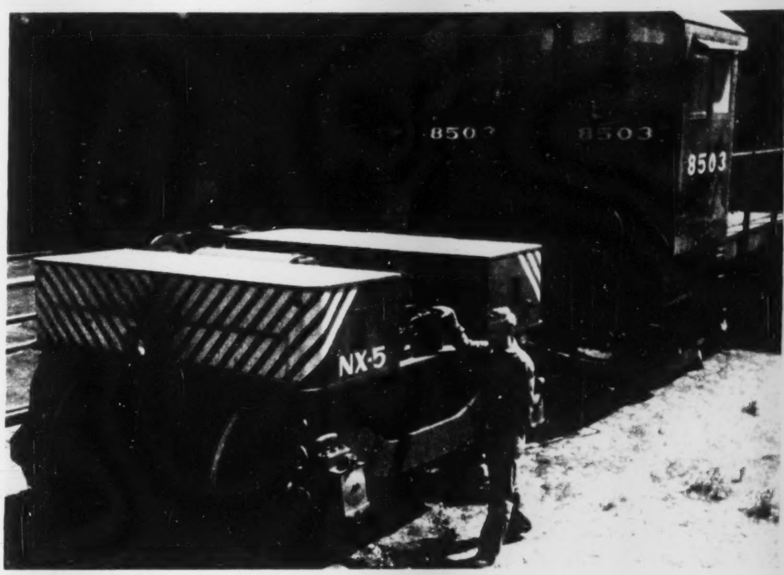
Oscar G. Knapp, president, Clark Bros. Bolt Co., Milldale, Conn., was feted recently at the 22nd annual dinner of the Industrial Fasteners Institute, honoring his 50 years of service to the bolt, nut and rivet industry.

H. N. Bailey Organizes Firm

A new organization to represent aircraft component manufacturers was formed under the name of H. N. Bailey & Associates with headquarters in Los Angeles. The group also will cover Dayton, O., and Washington, assisting contractors in their dealings with the military.

Valve Firm Marks 30th Year

Edward Valves Inc., subsidiary of Rockwell Mfg. Co., East Chicago, Ind., is celebrating the 30th anniversary of its founding. The anniversary year was marked by co-ordination of all engineering and research activities under the supervision of L. H. Carr and by completion of new buildings and the installation of testing equipment for designing and building valves for the highest pressure-temperature plants now being designed. W. F. Crawford is president.



Little "Doodlebug" Moves Big Diesels

Unique battery-powered locomotive, shown above, was designed and built by workers in the New York Central repair shop for diesel switching locomotives at Niles, Mich. The "doodlebug," made from parts left over from repair jobs, is guided by a man who keeps a finger on the controls as he walks beside it

Association Plans New Quarters

Construction of a building to house offices of National Machine Tool Builders' Association will be started soon. It will be built on East 102nd St., Cleveland, will be owned by T. W. Grogan Co., that city, and will be leased on a long-term basis to the association whose members account for some 90 per cent of the nation's machine tool output.

Morris Bean Expands Foundries

Morris Bean & Co., Yellow Springs, O., is increasing the floor area of its aluminum foundry to 88,000 sq ft by an addition now under construction. The new area will be in full production by January. Maximum productive capacity will be raised by 60 per cent. The foundry specializes in aluminum castings made by the Antioch process, developed by the company in the years between 1930 and 1936.

Simultaneous with the Yellow Springs project, several steps are being undertaken to increase capacity of the firm's ductile iron foundry in Cedarville, O. New electric furnaces for melting iron were installed last month. By the first of the year, production of the iron foundry is scheduled to be four times the former level.

Universal Welder Corp. Moves

Universal Welder Corp. moved to new quarters at 257 E. 79th St., Cleveland.

Reid Bros. Appoints Dealer

Reid Bros. Co. Inc., Beverly, Mass., appointed Satterlee Co., Minneapolis, as a dealer for its precision surface grinders.

Builds Typewriter Plant

L. C. Smith & Corona Typewriters of Canada Ltd., Toronto, Ont., broke ground for a factory and head office on Bertrand avenue. The firm will erect a plant containing 50,000 sq ft of floor space, with sufficient space to meet expected increases in output. The plant will house an assembly line for electric typewriters. Comple-

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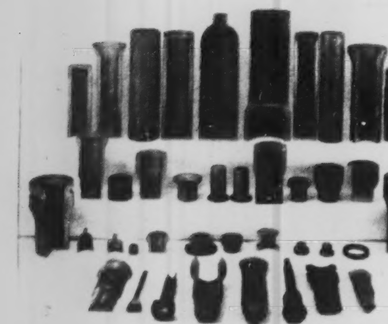
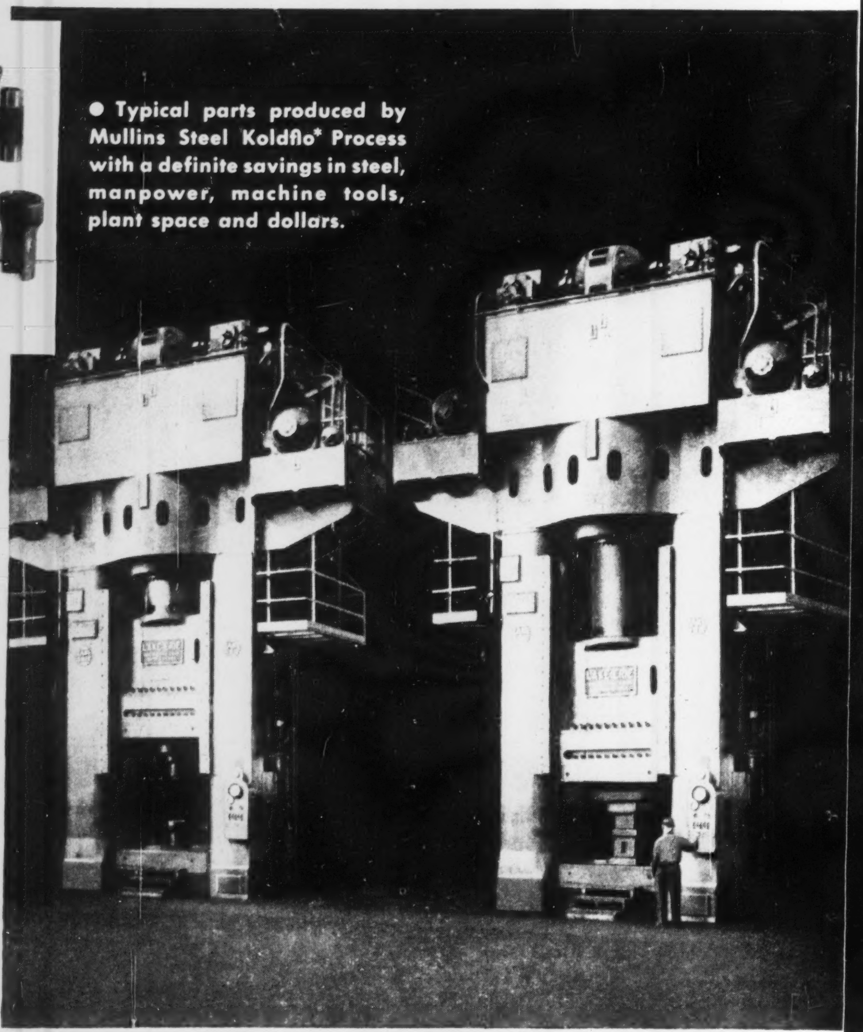




● Typical parts produced by Mullins Steel Koldflo* Process with a definite savings in steel, manpower, machine tools, plant space and dollars.

WORLD'S FIRST COMMERCIAL FACILITY

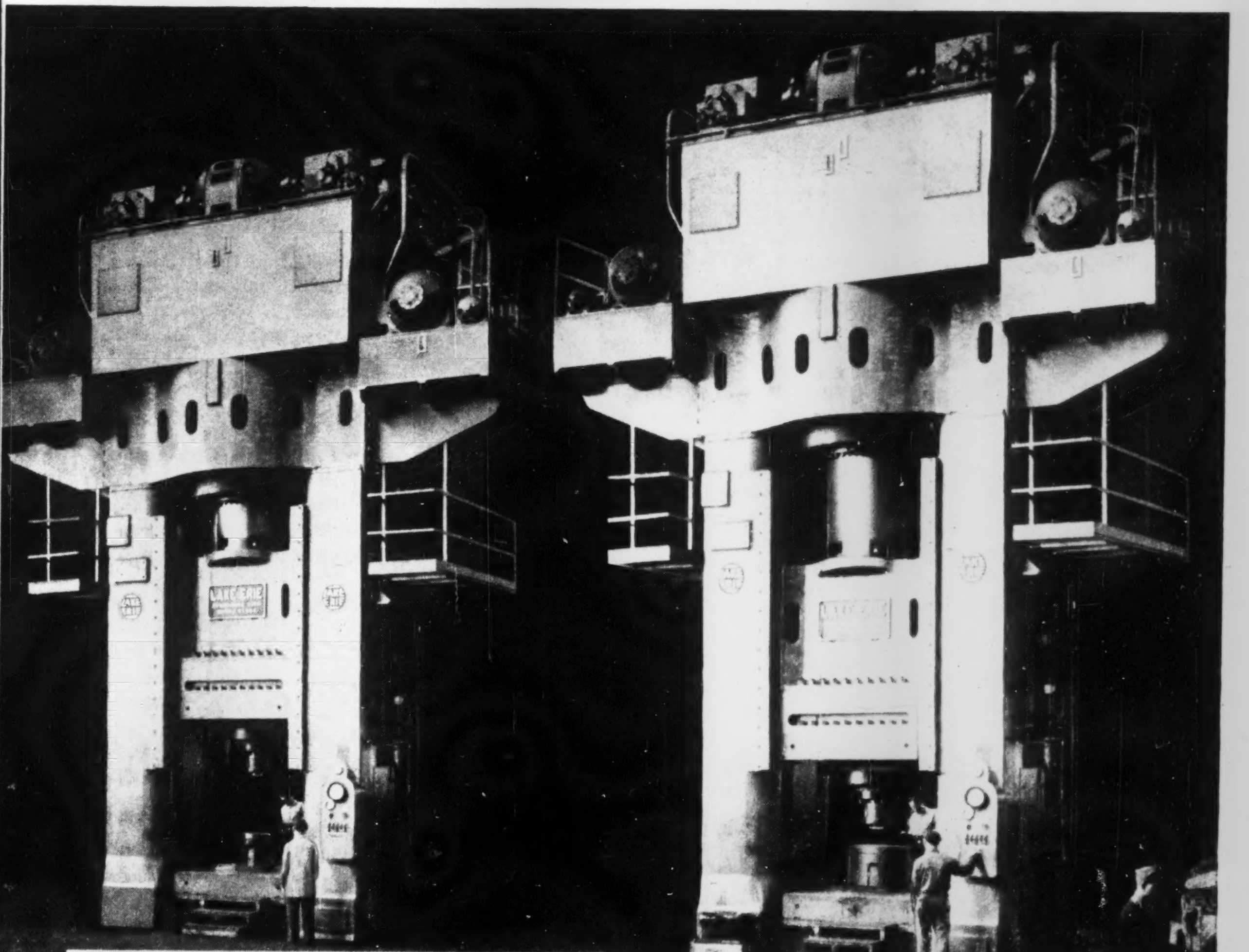
for producing parts by MULLINS STEEL Koldflo* Process

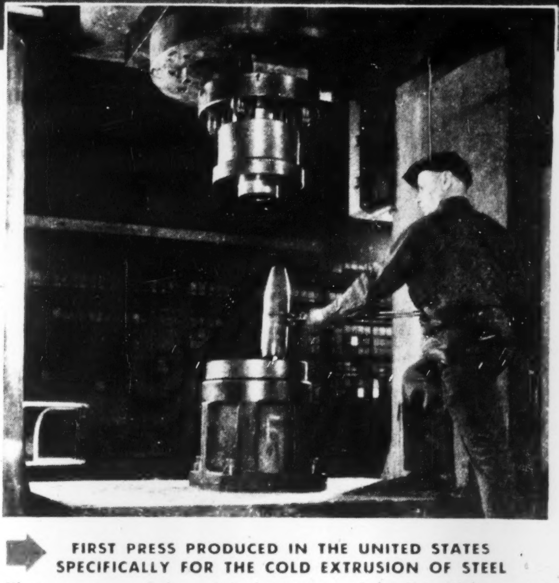
This new facility of the Mullins Manufacturing Corporation makes available to American Industry for the first time the economies and other advantages of Koldflo* production. It is a process in which parts are cold-formed into hollow shapes with a wide variety of configurations and in lengths from 6″ to 36″ with diameters from 2″ to 6″. The finished products come from the presses with smoothness, hardness, strength and precision. All of these desirable features are obtained by this process while using low carbon, low cost steel.

MAIN BATTERY OF PRESSES FURNISHED BY LAKE ERIE

These four 3,000-ton hydraulic presses weigh over 700,000 pounds each. They stand 33′-3″ above the floor and extend 6′-7″ below the floor. Beds measure 72″ x 60″, daylight openings are 96″ and strokes 48″. The high-speed, self-contained pumping units on each press are powered by 750 HP motors. This installation is another excellent example of Lake Erie's ability to construct hydraulic presses for any process or manufacturing requirement.

*Koldflo is a trade mark of Mullins Manufacturing Corporation.





FIRST PRESS PRODUCED IN THE UNITED STATES SPECIFICALLY FOR THE COLD EXTRUSION OF STEEL

Close-up view of the original 3,000-ton Lake Erie "laboratory" press purchased by Mullins in 1949 for Koldflo* development and production. Outstanding performance of this press led to the selection of Lake Erie equipment again for the main battery in Mullins' new commercial installation. There can be no better evidence than this of customer confidence and satisfaction.

LAKE ERIE
HYDRAULIC PRESSES

LAKE ERIE ENGINEERING CORP.

General Offices and Plant
882 Woodward Avenue, Buffalo 17, New York
District Offices in New York • Chicago • Detroit • Pittsburgh
Representatives in Other U. S. Cities and Foreign Countries
Manufactured in Canada by CANADA IRON FOUNDRIES LIMITED

HYDRAULIC PRESSES • DIE CASTING MACHINES
ROLLING MILL AUXILIARY EQUIPMENT

LAKE ERIE ®

(Continued from Page 93)

tion of the building is set for late this year.

Corp Celebrates 60th Year

Corp Bros. Inc., Providence, R. I., is celebrating its 60th anniversary this year. The company has grown from a small bicycle repair shop to three large establishments for the sale and servicing of welding equipment and materials. Alfred E. Corp is president and treasurer.

Fellows Gear Shaper Expands

Fellows Gear Shaper Co., Springfield, Vt., laid foundations for a heavy machine building. Steel frame is about to be erected. A. C. Tuttle Co., Boston, is the general contractor.

Platz Gets Institute Post

Edward H. Platz Jr., manager of alloy sales, Lebanon Steel Foundry, Lebanon, Pa., was appointed chairman of the public relations committee, Alloy Casting Institute, New York. Brad B. Evans, Empire Steel Castings Inc., Reading, Pa., and C. M. Ruprecht, Electro-Alloys Division, American Brake Shoe Co., Elyria, O., will serve with Mr. Platz on the committee.

Great Lakes Expanding

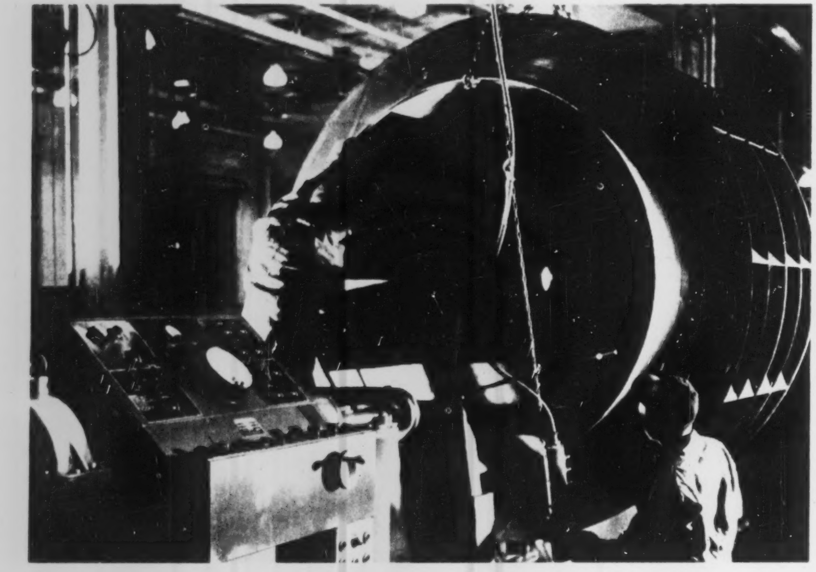
Capacity of "A" blast furnace will be doubled to help meet larger raw materials needs

GREAT LAKES STEEL CORP., Ecorse, Mich., is rebuilding and enlarging its "A" blast furnace at its Zug Island plant (see STEEL, Aug. 17, p. 200). This unit of National Steel Corp., Pittsburgh, awarded the contract to Koppers Co. Inc., that city.

Doubles Capacity—Work on the project will start next spring. When completed, the rebuilt furnace will have a capacity of about 500,000 tons per year, which is twice as large as the capacity of the present furnace, and will increase the total pig iron capacity of the four blast furnaces at the Zug Island plant to about 2 million tons.

This project will help to provide the larger quantity of raw materials required because of National Steel's expansion of steelmaking capacity which will reach the 6-million-ton mark by the end of 1953, representing an increase of more than 50 per cent since 1945.

The rebuilt furnace will be almost identical with Great Lakes' "D" furnace which started operation in September, 1952. It will be of Freyn design, and engineering work is now under way at Koppers' Freyn Division. The furnace will be 109 ft high and will have a hearth diameter of 28 ft. It will be equipped to operate with increased top pressure.



Precision Balancing Cuts Fan Vibration

Large centrifugal fans, like the one above, require hairline balancing to cut vibration and noise. Engineers of Trane Co., La Crosse, Wis., developed a system that obtains a fan balance as accurate as the fit of the fan's shaft to hub. Trane makes steam specialties, air conditioning equipment, unit heaters, etc.

Buys Transformer Product Line

Technical Industries Inc. purchased the Transformer Division of Mullenbach Electrical Mfg. Co., Los Angeles and moved to 2248 E. 37th St., that city.

GE Retools Buffalo Tube Plant

General Electric Co., Schenectady, N. Y., has retooled its television tube plant in Buffalo in a multimillion-dollar project, and most of the work has been completed. The operation involved about 60 per cent of the plant's equipment. A $100,000 addition to the Buffalo plant is now complete, adding 7000 sq ft of floor space.

Ames Appoints Representative

B. C. Ames Co., Waltham, Mass., producer of micrometer dial gages and indicators, appointed Terry Inc., Washington, as its representative in that area.

Refractories Firm Builds Plant

General Refractories Co., Philadelphia, recently completed its second Los Angeles area plant in Maywood, Calif. It is designed specifically to produce Ritex and Steelklad brick. The plant is equipped with a plate shop where sheet steel is cut and formed for plated brick. The plant also will produce cements.

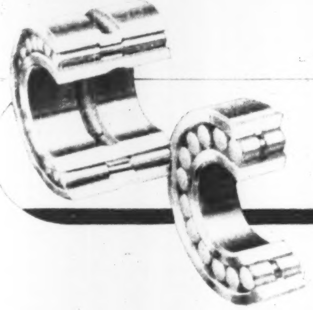
W. H. Brady Co. Moves

W. H. Brady Co., maker of self-sticking industrial products, moved its office and plant to 727 W. Glendale Ave., Milwaukee.

Tebben Heads Equipment Firm

John D. Tebben, management consultant, was elected president and chairman of the board of the recently organized Wagner Bros. Equipment Co., 42056 Michigan Ave., Wayne, Mich. The firm started operations in June, having been

(Advertisement)



Over 33% Greater Capacity For The Same Size

There is a challenge facing manufacturers today to build smaller and more compact machines with extra precision and to combine more operations in each machine. This makes the selection of the proper bearings extremely important. A definite plus factor in this selection is the availability of a precision bearing that will deliver extra load carrying capacity in a minimum amount of space.

Obviously roller bearings, and particularly those of the small (needle) roller type occupy far less bearing space for equivalent capacity than ball bearings. Roller bearing capacity is built up in proportion to the effective race and roller contact provided. Thus a full type roller bearing *without space wasting cages* should provide the greatest capacity of any type of anti-friction bearing. However, to offer a perfect bearing the resulting full roller complement must be prevented from skewing and binding where misalignment occurs in the application.

The Guiderol bearing is the accepted answer to all these requirements considering precision, load capacity, long life, versatility of mounting, and ease of lubrication. Published ratings show the Guiderol CT Series bearing has over 33% greater load carrying capacity than the average of the four highest rated interchangeable bearings. As a result, a Guiderol bearing at least one size smaller can often be substituted with the necessary shaft and housing requirements reduced in size and cost.

Bearing	McGill Guiderol No. GRI-209	Brand A Bearing	Brand B Bearing	Brand C Bearing	Brand D Bearing
Published Load Rating	8370 lbs.	6700 lbs.	7000 lbs.	5520 lbs.	6080 lbs.

Capacities at 2500 hours average life at 100 RPM

How Rollers Are Guided

In the Guiderol bearing design the grooved rollers with full race width contact are prevented from skewing by a center guide rail. Normally the rollers run on a true axis not contacting the rail and thus need no correcting. (Fig. 1) Should misalignment cause a shift off center (Fig. 2) the leading end of the roller is retarded by contact with the rail at location Y. The trailing end catches up, relieving the rail contact, and the roller then resumes normal operation.

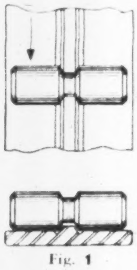


Fig. 1

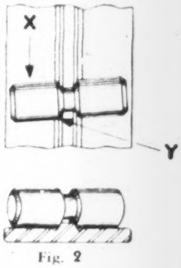
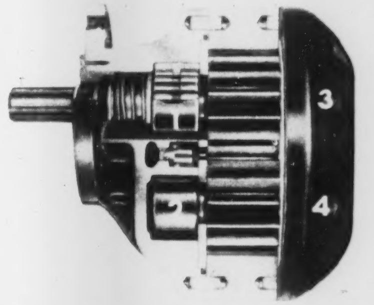
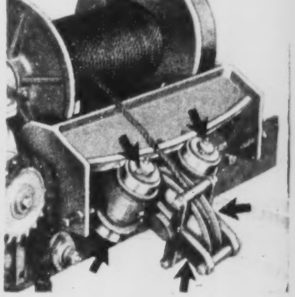


Fig. 2

Typical GUIDEROL® Bearing Mountings

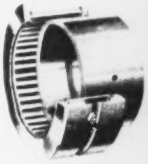


On a Hydreco Gear Pump Idler and Drive Shaft, 4 Guiderol bearings are used. The longer rollers of the Guiderol bearings are effective virtually to the edge of the races. This gives substantial support close to the gear and materially reduces shaft deflection

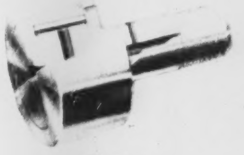


Four Guiderol bearings support and guide an automatic spooling attachment across the face of the reel track on a 20,000 pound Gar Wood Reel-Rite Winch. The guided roller principle prevents skewing of rollers in the 4 vertically mounted bearings even with a 10,000 pound angular load per bearing. A fifth Guiderol bearing in the sheave provides added stability and eliminates binding due to off-center loading.

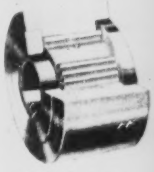
MULTIROL® Bearings



SE Series



CF Series



CYR Series

A new 140-page Bearing Reference Guide complete with 30 pages of vital engineering data has just been released by the McGill Manufacturing Company.

It has the full story on the advantages of Guiderol Bearings and in addition contains complete information on the well-known Multirol CF, CYR and SE Bearings. *Send now for your copy of the McGill Catalog No. 52.*

McGILL® — Precision Bearings

McGILL MANUFACTURING COMPANY, INC.
301 N. Lafayette Street, Valparaiso, Indiana

here's large size in socket screws
(larger than usually listed)

Diameters up to 1½"—and larger in full range of lengths

they're part of the
CLEVELAND
Top Quality
line

It's good to know where you can find these unusual sizes in plain head Socket Screws, accurately made of alloy steel by modern methods—double heat treated to obtain desirable physical properties — and shipped with *threads protected.*

write for prices and delivery information

. . . In the standard range of sizes Cleveland makes plain and knurled regular Socket Heads and Flat Socket Heads. Also a wide range of sizes in Hexagon, Flat and Fillister Head Cap Screws, Square Head Set Screws, and Milled Studs.

CLEVELAND *Top Quality* **FASTENERS**

THE CLEVELAND CAP SCREW COMPANY
2935 East 79th Street, Cleveland 4, Ohio
Warehouses: Chicago • Philadelphia • New York • Providence
originators of the Kaufman DOUBLE EXTRUSION Process
Ask your jobber for Cleveland Fasteners

organized by a group of employees of Wagner Bros. Inc., manufacturer and warehouse supplier to the plating industry. The new firm will build electroplating equipment.

Work and Be Safe

WHERE is it safer—at work or off the job?

As far as employees of United States Steel Corp., Pittsburgh, are concerned, the answer is "at work" by a 3-to-1 ratio. The big accident risk begins when they start for home.

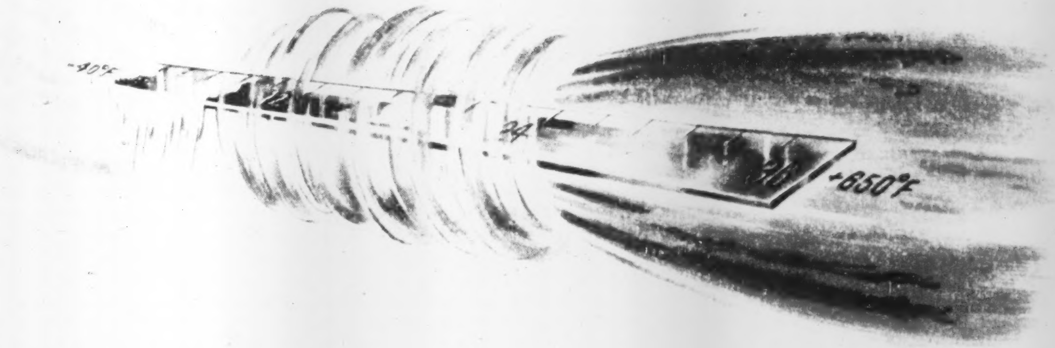
It might appear that U. S. Steel employees have a relatively high off-the-job rate of accidents, but this is not the case. Comparison with National Safety Council records shows that U. S. Steel's rate is less than half of the national average. Actually, Safety Council statistics for 1952 reveal that for each 1000 men in all types of work 45 lost-time accidents occurred off-the-job on a nationwide basis, whereas U. S. Steel's records indicate that men enrolled in its insurance plan had only 17 per 1000.

The record indicates that safety training in plants is making steelworkers safety conscious to the extent that safe habits are being carried into off-the-job living, with a resultant reduction in accidents.

U. S. Steel's accident record is one of the best in all industry. The corporation received the honor award from the Safety Council this year for its record of only 2.17 accidents per million man-hours worked in all steel producing divisions.

Wesco To Distribute Test Unit

Agreement was reached between Westinghouse Electric Supply Co., New York, and Multi-Amp Corp., Harrison, N. J., providing for exclusive national distribution of the latter's portable high-current test instruments through the 117 Wesco branches.



IN 3 FEET
WE CHANGE AN ARCTIC GALE INTO A VOLCANO

...it may hold an idea YOU can use!

You can almost *see* the metal *wanting* to protest. Super-frozen by arctic cold at the intake. Super-roasted at the outlet, only a yardstick's length away. And rotating 10,000 times a minute miles high in the air in an aircraft jet engine.

The Jet Division has a broad knowledge about commercial metals, including some you may not have used yet. We also know a lot about combinations of metals and how to make one work happily with another to lick once-insurmountable problems in unusual applications. We can also engineer and produce unusual assemblies that use these metals.

The know-how and facilities the Jet Division has built up to solve problems for jet-engine builders can be adapted to *your* product . . . present or planned.

Tell us what you have in mind . . . we'll gladly work out the details with your designers and engineers.

JET DIVISION

Thompson Products, Inc.

DEPT. JP-9 • CLEVELAND 17, OHIO

GE Broadens Metallurgical Research

Revolutionary developments in the metallurgical field are expected to be hastened by facilities to be provided in a laboratory at the Knolls, near Schenectady, N. Y.

RADICAL ADVANCES in metals and related products are expected to be hastened by a metallurgical development laboratory which General Electric Co., Schenectady, N. Y., will establish as part of the company's multimillion-dollar Research Laboratory at the Knolls, near that city.

The structure will provide extensive facilities in which new metallurgical materials developed in the laboratory can be produced in sufficient quantities to enable them to be evaluated by operating components of the company. This pilot-plant stage forms an essential step between research and application, says Dr. C. G. Suits, vice president and director of research.

Basic Problems—Dr. Suits says the new structure will provide facilities that may help pave the way for revolutionary metallurgical developments. Among the many possibilities offered by basic problems now being investigated by the laboratory are: Faster jet planes and more economical production of electric power which would result from alloys that could withstand higher temperatures than those now in use; smaller electric motors and transformers which could be built if permanent magnets could be made ten times stronger than present ones; greatly simplified construction of motors and transformers by developing a method to permit molding or casting of cores for such equipment. Cores are presently formed by a laborious process of stacking sheets of metal.

Pointing out that the science of metallurgy presents many of the outstanding research opportunities today, Dr. Suits says that solutions to these three problems, alone, would be "major contributions to the world's way of living."

"Unquestionably a real revolution in the theory and practice of metals and alloys is taking place," the GE official says. "In many important properties of metals, such as tensile strength, magnetic energy and high-temperature rupture strength, the theoretical limits imposed by nature are vastly higher than the practical values that now have been attained.

"Since it is the properties of metals and alloys of which they are made that impose a limit on the performance and capacity of a vast array of mechanical things, there is thus placed a great premium upon improved metallic materials."

Unique Facilities — The new structure will provide GE scientists unique laboratory facilities, such as cold rolling mill, an arc furnace and other pieces of equipment for the experimental processing of metallurgical materials.

Principal new equipment to be installed in the metallurgical materials and processing building will be facilities for study of the processing of metal sheet; an extrusion press for forming high-temperature metals, such as molybdenum, zirconium and others that are highly alloyed; forging, swaging and other metal-forming equipment; and furnaces operating at high temperatures.

Apparatus for melting and casting metals under various atmospheres, by means of induction melting, arc melting and other foundry techniques, will be able to handle every known metal. Complete facilities for the experimental production of ceramic materials also will be provided.

A total floor space of 71,000 sq ft will be provided, compared to some 13,000 sq ft now devoted to metal processing in the main building of the Research Laboratory.

Shifts Operations to Elkhorn

Welding Products Division, A. O. Smith Corp., transferred manufacture of its newly-designed line of ac and dc welders from Milwaukee to expanded quarters at Elkhorn, Wis. Construction is under way to add 16,000 sq ft of manufacturing space to the Elkhorn plant.

No. 7
STEEL's
Management
Series . . .

The editors of STEEL herewith present the seventh in a series of ten articles in this publication's Program for Management. The complete list:

1. **Public and Community Relations** (Feb. 23, page 53)
2. **Industry-Government Relations** (Mar. 30, page 53)
3. **Research, Basic and Product** (Apr. 27, page 55)
4. **Purchasing** (May 25, page 105)
5. **Business Forecasting, Midyear Review** (June 29, page 47)
6. **Distribution — Post-Emergency Challenge** (Aug. 3, page 57)
7. **Labor and Industry Relations**
8. **New Materials**
9. **Depreciation and Re-Equipment**
10. **Market Research**

LABOR AND INDUSTRY RELATIONS
No. 7 of a Management Series

A Job for Management: Better Labor Relations

OHIO HOIST & MFG. CO., Lisbon, O., went out of business last spring because, as its management said, "We cannot stand additional costs brought on by pay increases."

FALCON BRONZE CO., Youngstown, went out of business this summer because it could not reach an understanding with its union and workers.

Big Labor is increasingly encroaching upon management's right to manage. That has been a trial to industry in the past lush period; in the future it will hamper executives still more as they prepare for competitive conditions ahead. That's why more and more men in management are casting about for a revised approach to labor and industrial relations.

It Could Be You—Ohio Hoist's problems are symptomatic of one of the two major labor-relation challenges to industry today—how to regain control of its employment costs so it can reap at least part of the gains resulting from improved productivity. Falcon Bronze's problems are typical of the other—how to develop better communications to win employees' acceptance of the economic facts of life and greater allegiance to management.

Industry must solve the Ohio Hoist problem soon or find itself doomed to ever-spiralling labor costs. In the next year it must make more progress than it has shown to date on the Falcon Bronze difficulty, or it will find itself doomed to eventual socialism and even greater union domination. Aside from a few brilliant and heartening exceptions, most companies today are doing a mediocre job in both areas. Since the end of World War II, too many firms have let unions hold the initiative on labor relations matters. And with rare exceptions has management ever raised its voice to more than a whisper to say that it can keep employees' best interests at heart as effectively as union bosses.

Good Sign — Fortunately, management has already begun its campaign to reap more of the savings resulting from better equipment and other methods of cutting costs by getting tougher about work standards. That campaign has been at the bottom of some of the bitter strikes we have had in 1953 and will probably spark serious walkouts we shall have in the coming months.

The five-week work stoppage at Ford Motor Co.'s Canton, O., forging plant last April and May was basically a dispute over work standards. It started over the apparently trivial argument that in one little department seven men were asked to do the work nine were doing before rearrangement in the department's machine setup. The same kind of issue was at the bottom of the Borg-Warner Corp. strikes this year.

More and More—At least one labor arbitrator, who handles about 100 cases a year, finds that some 90 per cent of his cases in the last 12 months have been work-standards disputes. Other arbi-

MAN-DAYS LOST BY STRIKES

	NUMBER	PERCENT OF ESTIMATED WORKING TIME
1953*	23.8 million	20
1952	58.6 million	57
1951	22.6 million	24
1950	22.9 million	23
1949	38.8 million	44
1948	50.5 million	59
1947	34.1 million	37
1946	34.6 million	41

*Estimated by STEEL [illegible] other figures, Bureau of Labor Statistics

trators report nearly as high a proportion.

The work-standard issue is undramatic, complex and difficult to promote in newspapers to the general public. So, unions always try to draw some other more easily understood concept into the negotiations. In the 1952 steel strike work standards were under heated discussion, but the general public heard little about that, but a great deal about the union shop and wage gains.

How To Win—Many industrial relations experts think management should be willing to give some concessions in order to get tighter work standards. Management should be prepared, argue observers, to reveal more of its financial facts to prove that it needs better work standards. It should use its own experts or outside specialists to write improved standards into a permanent guide on the matter. And it should know in advance what labor will demand at the next negotiations so that it can wisely figure what concessions it will have to grant to win the all-important improvements in standards.

What Labor Wants

What labor will demand in the next 16 months depends on economics. If times are good, the emphasis will be on large pay concessions. If times are just fair, the emphasis will be on security gimmicks, such as the guaranteed annual wage or increased pensions and other forms of social benefits.

Most labor and economic observers predict that economic conditions in the coming months will dictate that labor take the second course. Signs indicate that union officials are already on that road.

Going Down—Thus far this year the weighted average pay increase for the Cleveland area has been 6.98 cents, excluding fringes. That figure, compiled by Associated Industries of Cleveland, is considered indicative of the national average because Cleveland has such a wide variety of companies, both in size and type of manufacture. The current pay gain compares with 11.75 cents in 1952 and 7.18 cents in 1951. Fringe benefits this year, which run between 1 and 1½ cents, are lower than in either 1952 or 1951.

Management's increasing concern about work standards and productivity is reflected in another trend that has started this year: Greater proportionate increases have been going to skilled workers. Indicative of that is the General Electric Co. wage settlement which ranged from 3½ to 15½ cents depending on the classification of skill. Until recently, unions have held out for flat, across-the-board raises regardless of workers' skills.

Past, Future—So, on the basis of what has happened in the past eight months and what economic conditions are expected for the next 16, what will unions ask for in the future?

As the accompanying table indicates, 1953 is going to prove to be one of the quietest labor years since the end of World War II—at least from the standpoint of few strikes. And 1954 promises to be about as peaceful. Even if labor is relatively quiet consolidating its gains, it will still be hammering away at a program over the next 16 months. It looks like it will be this:

1. Steady opposition to major changes in work standards.

2. The guaranteed annual wage.

3. Higher pensions and social benefits.

4. Pay increases.

Matter of Emphasis—The first point of the program will be soft pedalled, even if it is the most important. The most publicity will go to the second, although labor considers 1954 a softening-up year on the issue and doesn't expect actually to get it into many contracts before 1955. Even then, most contracts that do guarantee work and pay will do so for a period that's far below a full year—say 26 or, at the most, 39 weeks. The third point will be emphasized according to the headway made on the guaranteed wage.

Look for a lot of talk about higher pensions and social benefits if the guaranteed wage falls flat. Expect very little if the guaranteed wage makes the anticipated headway. All-in-all, fringe costs next year will probably go up only moderately—about 1 or 2 cents. On the fourth point, the labor representatives will as usual undoubtedly ask for the moon for wage hikes, but will settle for an average that's below 1953's—probably about five or six cents.

GM in the Picture—Five cents as a pay increase is a good bet for the average in 1954 because that's the increase automotive companies with the General Motors-type contract are committed to give next year (in May) as a productivity increase. You can expect the automotive labor scene to be fairly quiet in 1954 because the

United Auto Workers were able to reopen the five-year documents in 1953 and will probably let well enough alone until the contracts expire in 1955.

The most important labor contract reopening in 1954 is the steel document. It comes up for a complete overhaul for the first time since 1949. Of paramount interest to most steel companies will be the work-standard and other right-of-management clauses in it. But getting the most publicity will be the guaranteed annual wage which the United Steelworkers of America has gone on record as saying it will demand.

Conformity — Negotiations in steel will conform to the general metalworking pattern in that the guaranteed wage issue will be mostly talk and an attempt to get a joint labor-management committee to study it for future parleys. But greater emphasis in steel than in other industries will be placed on negotiations for pensions and other social benefits. Minimum steel pensions, with social security, now total $100 monthly for a man who retires at 65. In the auto field, the average is $137.50 for companies that have retirement plans, a figure at which the USA will aim as the level for a settlement. USA also wants greater medical benefits and double time for Saturday and Sunday work.

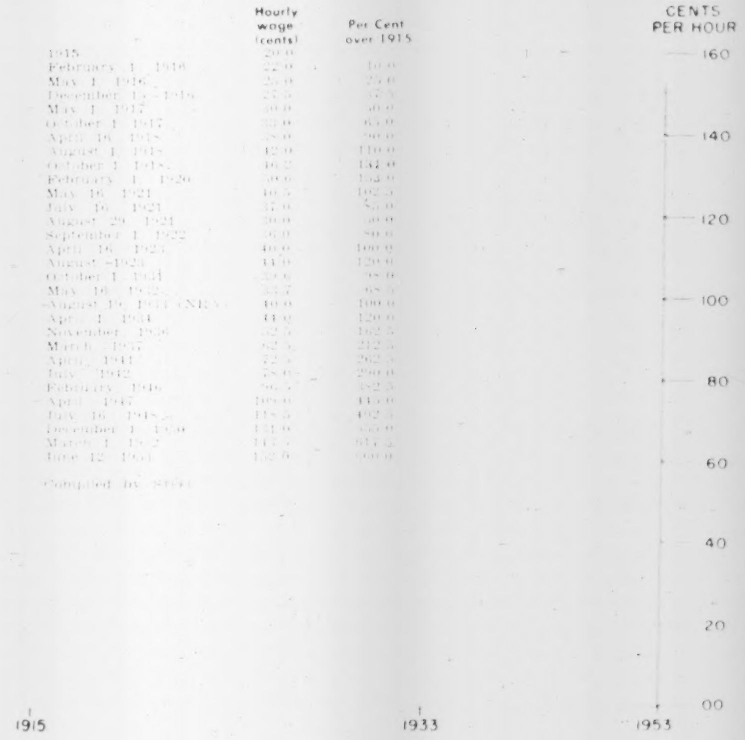
If the steelworkers win their pension, medical benefit and double time demands, they'll not press much for higher wages. If they don't win on those demands, they'll turn to wages and probably settle at the expected average for next year of 5 or 6 cents.

What Industry Wants

With that pattern of demands the most likely for 1954, what can industry offer as concessions? Or, to avoid the term "concessions" which has the negative tone so detrimental in the past to management's labor relations, what can industry offer as proposals?

The most effective offer is always money, and some industrial relations men now argue that in the next 16 months industry should experiment with the effectiveness of offering money in the form of

STEEL INDUSTRY'S MINIMUM LABOR RATES

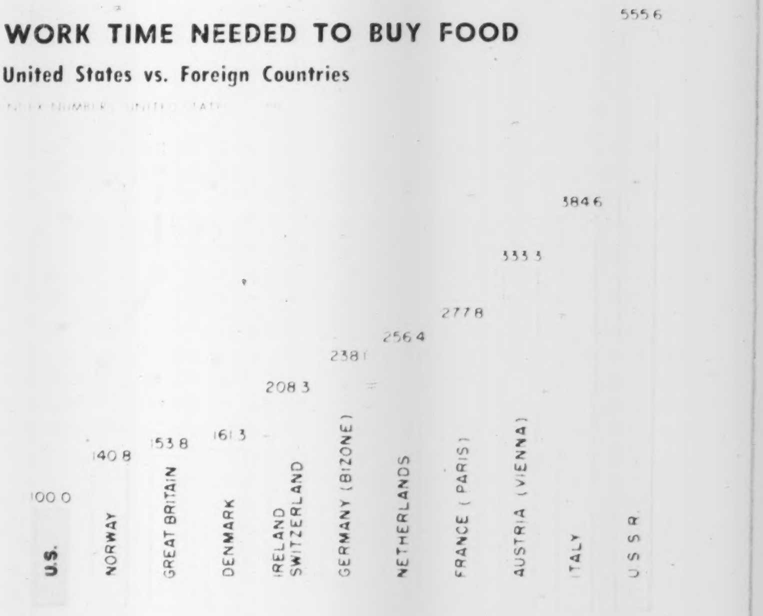


	Hourly wage (cents)	Per Cent over 1915
1915	20.0	
February 1, 1916	22.0	10.0
May 1, 1916	25.0	25.0
December 15, 1916	27.5	37.5
May 1, 1917	30.0	50.0
October 1, 1917	33.0	65.0
April 16, 1918	38.0	90.0
August 1, 1918	42.0	110.0
October 1, 1918	46.2	131.0
February 1, 1920	50.6	153.0
May 16, 1921	40.5	102.5
July 16, 1921	37.0	85.0
August 29, 1921	30.0	50.0
September 1, 1922	36.0	80.0
April 16, 1923	40.0	100.0
August 1923	44.0	120.0
October 1, 1931	36.6	83.0
May 16, 1932	33.7	68.5
August 19, 1933 (NRA)	40.0	100.0
April 1, 1934	44.0	120.0
November 1936	52.5	162.5
March 1937	62.5	212.5
April 1941	72.5	262.5
July 1942	78.0	290.0
February 1946	96.5	382.5
April 1947	109.0	445.0
July 16, 1948	118.5	492.5
December 1, 1950	131.0	555.0
March 1, 1952	143.5	617.5
June 12, 1953	152.0	660.0

Compiled by STEEL

WORK TIME NEEDED TO BUY FOOD

United States vs. Foreign Countries



WHEN WAR COMES, WAGES GO UP

(Weekly pay before and after the Korean War)*

	JUNE, 1950	JUNE, 1953	GAIN
ALL MANUFACTURING	$58 85	$72 04	
TRANSPORTATION EQUIP (incl autos, aircraft)	$72 53	$85 69	
PRIMARY METALS	$66 50	$85 48	
MACHINERY, except electrical	$65 69	$83 10	
ELECTRICAL MACHINERY	$58 62	$71 40	
FABRICATED METAL PRODUCTS	$62 87	$76 68	
ORDNANCE	$61 90	$79 46	
INSTRUMENTS	$58 93	$73 46	

[illegible] tax deductions

[illegible]

productivity increases somewhat like GM's annual improvement factor.

Genesis—Actually, that GM contract feature was originally as much a management as a labor idea. Its exact genesis is now obscure, but General Motors Corp. executives had a lot to do with figuring out workable details for the plan which that corporation first wrote into its contract in 1948. It calculated that the increased production per man-hour throughout its operations averaged a little more than 2 per cent yearly, which at that time meant a 3-cent-an-hour increase. That formula was in effect until 1950 when the current five-year contract was negotiated. Then, the 3-cent annual improvement factor was boosted to 4 cents, and then to 5 cents in negotiations this year.

Pro—The improvement factor has these advantages as an industry proposal:

1. It ties in with industry's attempts to keep more of the benefits of improved productivity.

2. It gives workers something that is positive and regular each year.

3. Productivity is readily merchandizable to the public.

Con—But the productivity factor also has several disadvantages as an industry proposal:

1. It is already half accepted—although erroneously—by the public as strictly a union idea.

2. Productivity is difficult to measure in many companies.

3. It becomes too easy for productivity increases to be granted on a negotiated basis rather than on the statistical basis of a company's experience with improvement in output per man-hour. As proof of that, look at what has happened to the productivity factor in GM and other auto contracts.

The productivity factor is now part of the contract in about 10 per cent of all metalworking firms. Most of them are in the automotive field and employ more than 1000. If industry does take on productivity increases as a management proposal:

1. Better facts should be gathered about improvement in output per man-hour. (Bureau of Labor Statistics and Machinery & Allied Products Institute's Council for Technological Advancement are doing work on that now.)

2. Part of that improvement should be kept as a rightful managerial increment because of management efficiency and capital investment.

3. Productivity grants should be based strictly on statistical experience with improvements in productivity at the company involved. They should not be on a negotiated basis, and they should not be made for XYZ Co. on the basis of General Motors' figures.

Better Communications

Management will never achieve its work-standards objectives without also effectively meeting its second most important challenge: improving employee communications to win better employee loyalty and understanding of economics.

The following six-point checklist is a guide that may help you in achieving your communications goals.

Number One—Formulate a positive program for your employees. That includes not only the positive counter proposal to union wage demands, but also a long-range program of employee benefits. That would perhaps consist of a schedule of pensions, social benefits or increased vacations for length of service. The positive program would also involve making your men and women aware of what your company anticipates its sales volume will be five to ten years from now, how it expects to regularize employment, what new equipment it plans to buy or what new markets or products it hopes to try. A Massachusetts manufacturer surveyed his employees and discovered that the majority of his 400 workers stayed with him primarily because they believed his company had a good growth potential. Pay, working conditions, social benefits, vacations and paid holidays followed in that order, as reasons for working for the firm.

Number Two—Find out what your employees think about you, as the Massachusetts employer did. You can do that through occasional formal questionnaires, but you can't try it too often and you can't get trustworthy answers to all types of questions. Many firms find that the most effective way to sample employee opinion is through informal surveys by foremen.

Number Three—Give employees their position on wages and benefits in comparison with the past and with other countries. In comparison with the past, it's wise to give wage figures over a long period of years (see the steel minimum wage trend in the chart on page 103). Over shorter periods, it's wise to correlate figures with some event as in the pre-Korea and post-Korea figures on the opposite page. In both cases, your own company's position should be tied in to the general situation. In comparing your wages with that of another country, it's often best to show them in terms of purchasing power, as is done in the chart showing U. S. and Russian wages (p. 103).

Number Four—Don't be different about personnel practices. Do approximately what your neighbor does. Individualism may pay off for a company in some ways, but it doesn't in labor matters. If you're below the standards of your neighbors, the union's business agent will soon be around to demand that you bring your personnel practices up to snuff. If you're above the norm, your neighboring company executives will be around to tell you that you've put them in a fine fix because the union now expects them to conform to your standards.

How do you know what the standards are? You can always call and ask. Many cities also have good personnel associations that can give you such information. In "Successful Labor Relations for Small Business" by James M. Black and J. George Piccoli, one of the best manuals recently published on the subject, the authors give this profile of personnel practices by company size:

In companies with 100 or less employees, it is better than even money that your shop is organized. If so, there is a one-in-three chance that you have a check-off system of collecting union dues. You allow a five-minute clean-up period, and your contract runs from year to year with an automatic renewal clause. Termination date is usually in April or May. You pay for all time spent on grievances in the plant or at meetings, and the odds are four to one that you give six paid holidays. It is 50-50 that you have an insurance program, but you give no pensions. You pay time-and-a-half for more than a 40-hour week. Your vacations schedule is one week for one year, two weeks for five.

In companies with 100 to 499 employees, the odds are four to one that you are unionized. But your personnel practices are similar to those of firms in the first group except: You probably check off union dues, and on overtime it is almost 50-50 that you pay time and a half for Saturday and double time for Sunday regardless of the number of hours worked in the week. Four of every five companies in your category give six paid holidays. The chance increases that you will have some type of insurance program, but still no pensions. Your vacation schedule is about the same as for smaller firms.

With companies employing 500 to 999, only 18 per cent are nonunion, and two-thirds of the organized shops have a check-off system. It is almost certain that you give six paid holidays and grant one week vacations for one year of service and two weeks for five years. Eighty-nine per cent of the firms of your size give group insurance. One out of three in your group has some type of pension plan, and the number is growing.

Nine out of every ten companies employing more than 1000 have organized shops. And there's a 96 per cent chance that you have an insurance program, 50-50 that you give pensions. You foot the bill for grievance time in the last steps, but only if you call the meeting.

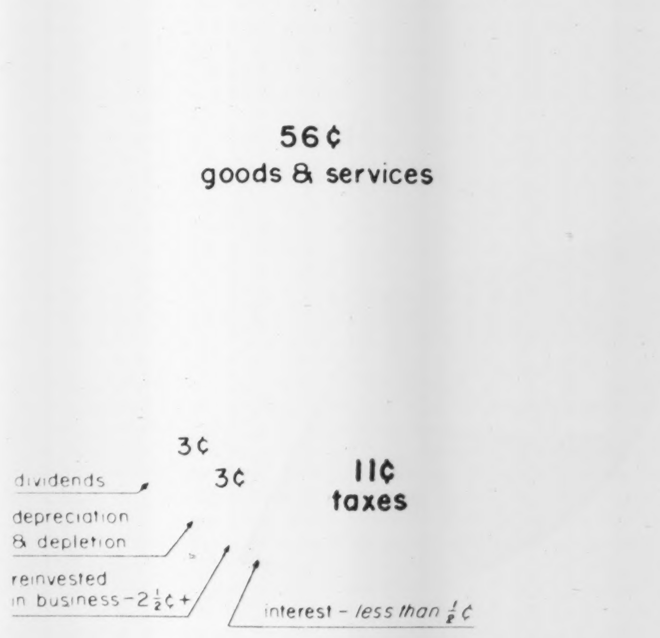
Number Five—Be consistent; record your policy. Your past is your future in personnel practices. As many a company has found to its sorrow when arguing a case before the National Labor Relations Board or an arbitrator, it lost because it had not consistently forbidden a practice it was now attempting to get outlawed, or because it had no written proof that it had forbidden the practice in the past.

So, it's wise to have a plan of personnel action. The plan should include:

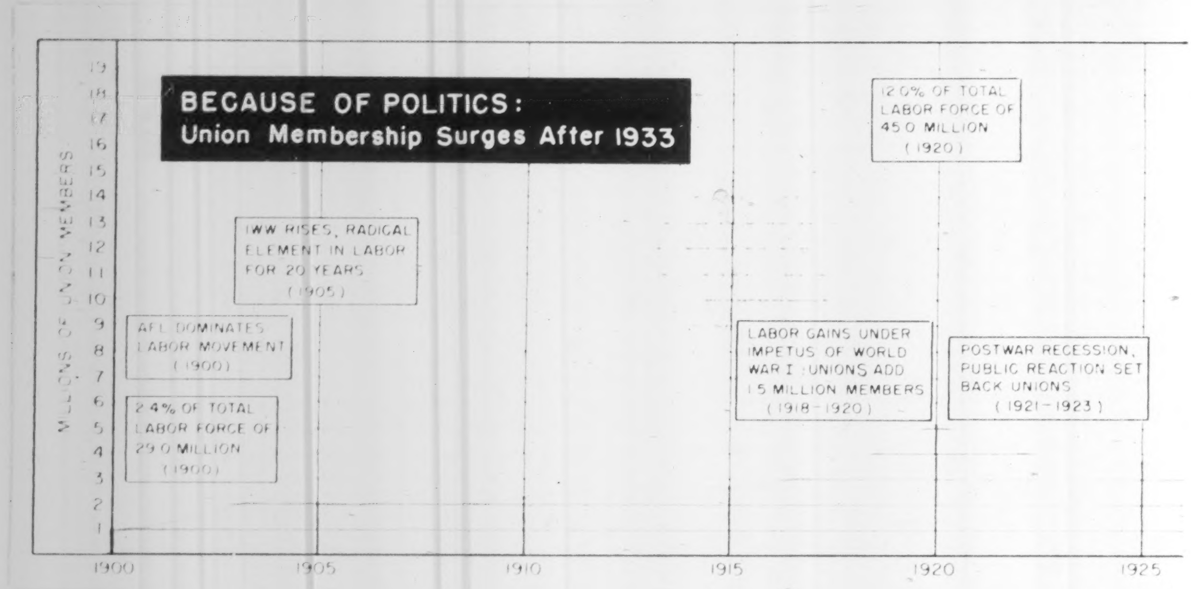
1. A statement of principle on personnel policy, defining the company position and practice on absences, accidents and all the rest.
2. A management organization chart showing who does what.
3. Periodic meetings of manage-

WHERE YOUR SALES DOLLAR GOES

Labor gets 24 percent in 77 largest manufacturing corporations in 1952



Source: National City Bank of New York and National Industrial Conference Board



BECAUSE OF POLITICS:
Union Membership Surges After 1933

ment personnel including foremen to integrate management activities and assist in collective planning on every aspect of the company's business.

4. A few simple forms for employee records, including ones for job applications, job records, grievances, physical examinations, production records and warnings concerning offenses.

As an example of what a lack of consistency does to you, organized labor in 1954 plans an all out drive against companies that have regional wage differentials. Labor's argument that such differentials are inconsistent is tough to disprove. The steelworkers union started the ball rolling on that point this year when early this summer it won eventual elimination of differential in the steel and aluminum industries.

Number Six—Improve communications by selling what you are doing for employees. All of the first five points in a good industrial relations program are hurt if this sixth one is below par, but the first and third are ruined without good selling.

Fortunately, industry has made progress here. It's using some of its product selling techniques on industrial relations, with excellent results. Republic Steel Corp.'s course in basic economics for employees, for example, has been terrific. The approaches are as numerous as in product selling, but probably the most common method to reach your men and women associates is the little manual or booklet given every employee. Typical is the "Lampmaker's Handbook" given to all workers in General Electric's Lamp Division. It's a 47-page affair that tells the company's nine-point program to make jobs better, gives data on wages, overtime rates, bonuses, vacations and holidays, tells about housekeeping, plant safety, cafeterias and the special prices available to employees in the purchase of the company products. It tells the history of the company, something about its organization and something about its products.

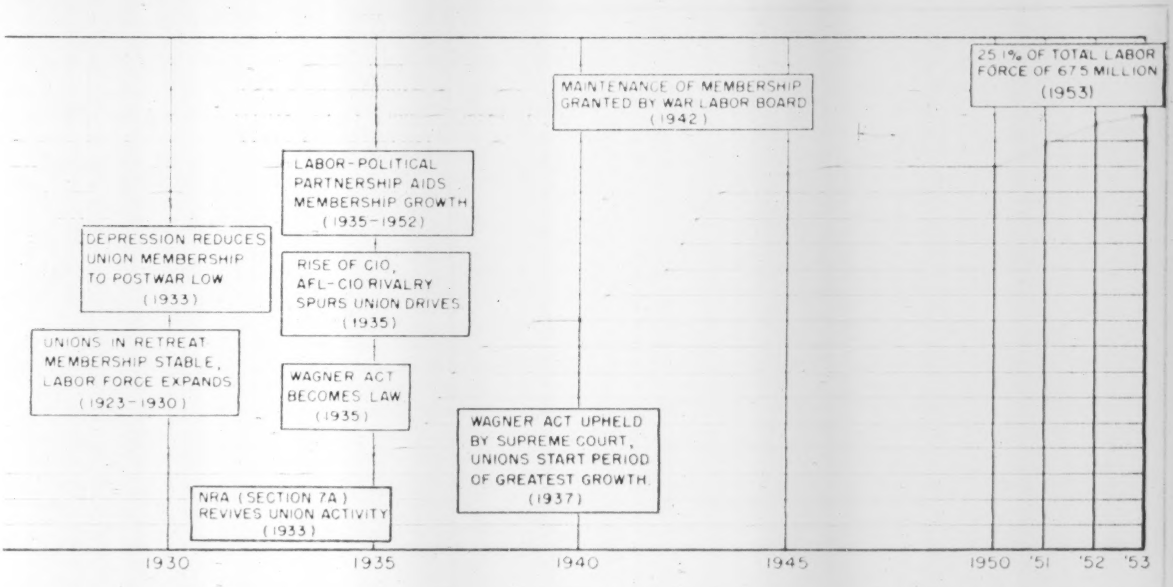
Probably the second most common way of getting management's story across is through the foreman. The third most prevalent method is through periodic employee letters, written simply, honestly and persuasively. Plant tours are found effective in selling management's aims and purposes, not only for employees but for the community, too. The employee newspaper, although too often filled with little but blurred pictures of fish and babies, can be an excellent vehicle for management stories on wage comparisons, the cost of labor (see the accompanying chart on the preceding page), company objectives and similar subjects.

The Master Key

Better employee and community communications by management is the key that can unlock the doors to many labor relations problems besides the major ones of productivity and improved employee loyalty.

One door that needs the key is the matter of union membership. Like Topsy, labor organizations have "just growed" to the point where they now represent some 25 per cent of the total labor force (see the accompanying chart on membership through the years.) Companies with less than 100 employees now are only about 50 per cent organized. And that's where the labor organizers are going to be working hard over the next year or so to boost their rolls. Plants with 100 to 1000 employees are 90 per cent organized, and plants with more than 1000 employees are 99% organized.

Like Salesmen—Union business agents work on tips just like any other salesman, and organization drives usually come as a result of an employee who has a real or fancied grievance of a personnel sort. To avoid incidents that give the unions their wedge, your written personnel policy should serve as a



bulwark against being approached by unions at all since the policy minimizes the chance of having a disgruntled employee.

But if you are approached by a business agent, listen to him politely. NLRB will sanction an election if he has one-third of the employees in your plant petitioning for the union. Set up the NLRB election for a time when the majority of your employees will be available to vote, such as a shift change.

Then, ignore the union organizer and his claims, but carefully prepare your strategy, your rebuttal and the way you expect to communicate with your employees.

On the eve of the election, present your case; an employee letter (see the sample on p. 108) is usually the most effective approach. In that letter, compare your company's position with that of others which are unionized, show what you have done for employees without the needle from the business agent. But be careful that you do not "influence" an employee's decision through anything that could be construed as a reprisal or reward.

Unhealthy—The big unions are turning to increased organizational drives because they have found that their attempts to gain members by raiding other unions don't pay. The AFL and CIO, after examining data on 1245 raids involving 350,000 workers that took place during 1951 and 1952, found that cannibalism isn't healthy. During those two years, the AFL carried out successful raids in 189 elections and the CIO in 218 elections. The net change in all those raids was a gain of only 8000 members by the AFL.

That data laid the groundwork for the AFL-CIO agreement early this year not to raid each other. The effectiveness of the action is open to doubt. Just last month, the carpenters' union pulled out of the AFL as a protest against the pact. Cannibalism will continue, but not as often as formerly. The drive is on pulling in nonunion members and on forming ever-larger unions.

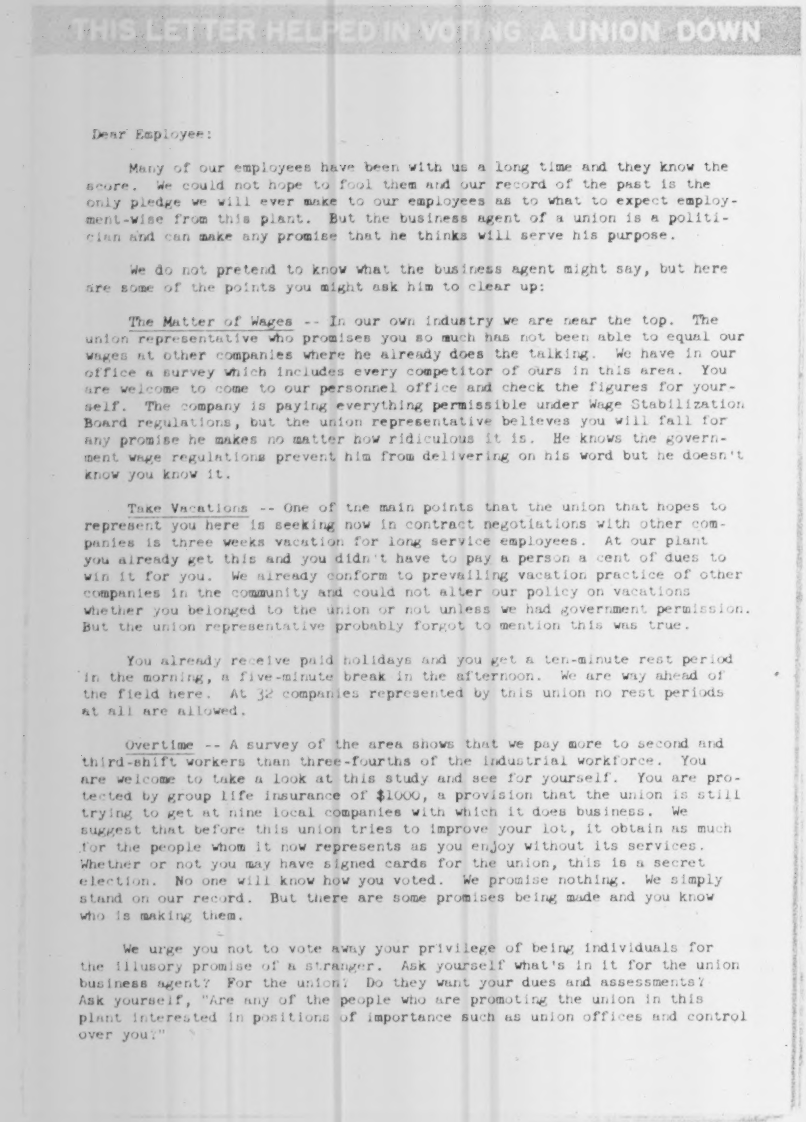
Bring on the Aspirin — That problem of ever-bigger unions is bringing on a new headache. More and more, companies employing less than 500 and dealing with immense organizations like the steelworkers, auto workers and teamsters, which all have more than 1 million members, find that they have little choice but to agree to the pattern set by earlier negotiations with big companies.

Before World War II, smaller companies usually set the wage-pattern pace. Now because of growth in size and power of unions, they tackle the big firms first.

Chance for Merger?—The CIO-AFL no-raid pact, reason some observers, could be the first step toward merger of the two major labor organizations in 1954. Don't believe it. The no-raid pact is simply an attempt to solve a common problem. While greater co-operation between the two is likely, merger is improbable because the two groups are each doing well as independents, because the merger would cut at least in half the number of top leadership jobs and because the basic philosophies of the two are markedly different. No merger will ever come until one or the other slips a long way in power and prestige.

But the possibility is strong for other union realignments in 1954. Here's why: The Republican victory at the polls in 1952 shook organized labor to its foundations and may shake loose some of the big affiliates, especially in the CIO. The deaths of AFL's William Green and CIO's Philip Murray also cut the only ties some affiliates had with the major organizations. However, George Meany as the new AFL president is proving to be a stronger man than expected and is fighting to lose no more than the carpenters. His move last month to make Dave Beck an AFL vice president was a step to keep Mr. Beck's teamsters in the fold.

Trouble in the Ranks—The CIO's new president, Walter Reuther,



THIS LETTER HELPED IN VOTING A UNION DOWN

Dear Employee:

Many of our employees have been with us a long time and they know the score. We could not hope to fool them and our record of the past is the only pledge we will ever make to our employees as to what to expect employment-wise from this plant. But the business agent of a union is a politician and can make any promise that he thinks will serve his purpose.

We do not pretend to know what the business agent might say, but here are some of the points you might ask him to clear up:

The Matter of Wages -- In our own industry we are near the top. The union representative who promises you so much has not been able to equal our wages at other companies where he already does the talking. We have in our office a survey which includes every competitor of ours in this area. You are welcome to come to our personnel office and check the figures for yourself. The company is paying everything permissible under Wage Stabilization Board regulations, but the union representative believes you will fall for any promise he makes no matter how ridiculous it is. He knows the government wage regulations prevent him from delivering on his word but he doesn't know you know it.

Take Vacations -- One of the main points that the union that hopes to represent you here is seeking now in contract negotiations with other companies is three weeks vacation for long service employees. At our plant you already get this and you didn't have to pay a person a cent of dues to win it for you. We already conform to prevailing vacation practice of other companies in the community and could not alter our policy on vacations whether you belonged to the union or not unless we had government permission. But the union representative probably forgot to mention this was true.

You already receive paid holidays and you get a ten-minute rest period in the morning, a five-minute break in the afternoon. We are way ahead of the field here. At 32 companies represented by this union no rest periods at all are allowed.

Overtime -- A survey of the area shows that we pay more to second and third-shift workers than three-fourths of the industrial workforce. You are welcome to take a look at this study and see for yourself. You are protected by group life insurance of $1000, a provision that the union is still trying to get at nine local companies with which it does business. We suggest that before this union tries to improve your lot, it obtain as much for the people whom it now represents as you enjoy without its services. Whether or not you may have signed cards for the union, this is a secret election. No one will know how you voted. We promise nothing. We simply stand on our record. But there are some promises being made and you know who is making them.

We urge you not to vote away your privilege of being individuals for the illusory promise of a stranger. Ask yourself what's in it for the union business agent? For the union? Do they want your dues and assessments? Ask yourself, "Are any of the people who are promoting the union in this plant interested in positions of importance such as union offices and control over you?"

has stepped on a lot of toes, notably those of David McDonald, head of the steelworkers. That's why nearly all rumors about formation of a third major labor group have included him as one of the ring leaders. He has undoubtedly speculated on that possibility in private, but he has not been in his present job long and chances are better than even that he will wish to keep the status quo for another year or so until he is more certain of his strength.

More likely to figure in new alignments are the mine workers, especially if the 73-year-old John L. Lewis fades out of the picture, the teamsters (their president, Dave Beck, is ambitious), the carpenters (they will not be strong in their present role of the independent) or the machinists (they are currently in the AFL but have had an in-and-out relationship with that organization for years). The possibilities of combination are almost endless, and another year or two will elapse before the game of musical chairs sorts out the more or less permanent alignments.

Conductor Eisenhower — Determining some of the tunes to be used in that game will be President Eisenhower. He is proving himself surprisingly skillful at playing one big labor organization against the other, and he has worked himself into a position whereby the various unions are vying for his approval.

The AFL, with its man, Martin Durkin, as secretary of labor, appears in favor at the moment; but the race has not yet been won (if it ever will be). Certainly, the AFL approach to labor problems is more in tune with Republican views. The AFL favors industry-labor bargaining. The CIO seeks to win its long-term goals through government support and intervention.

Groundless—Big Labor's fears that the President would be anti-union have proved groundless. His appointment of Mr. Durkin as labor secretary allayed many fears. And his recent proposals for changes in Taft-Hartley are surprisingly close to many of labor's ideas.

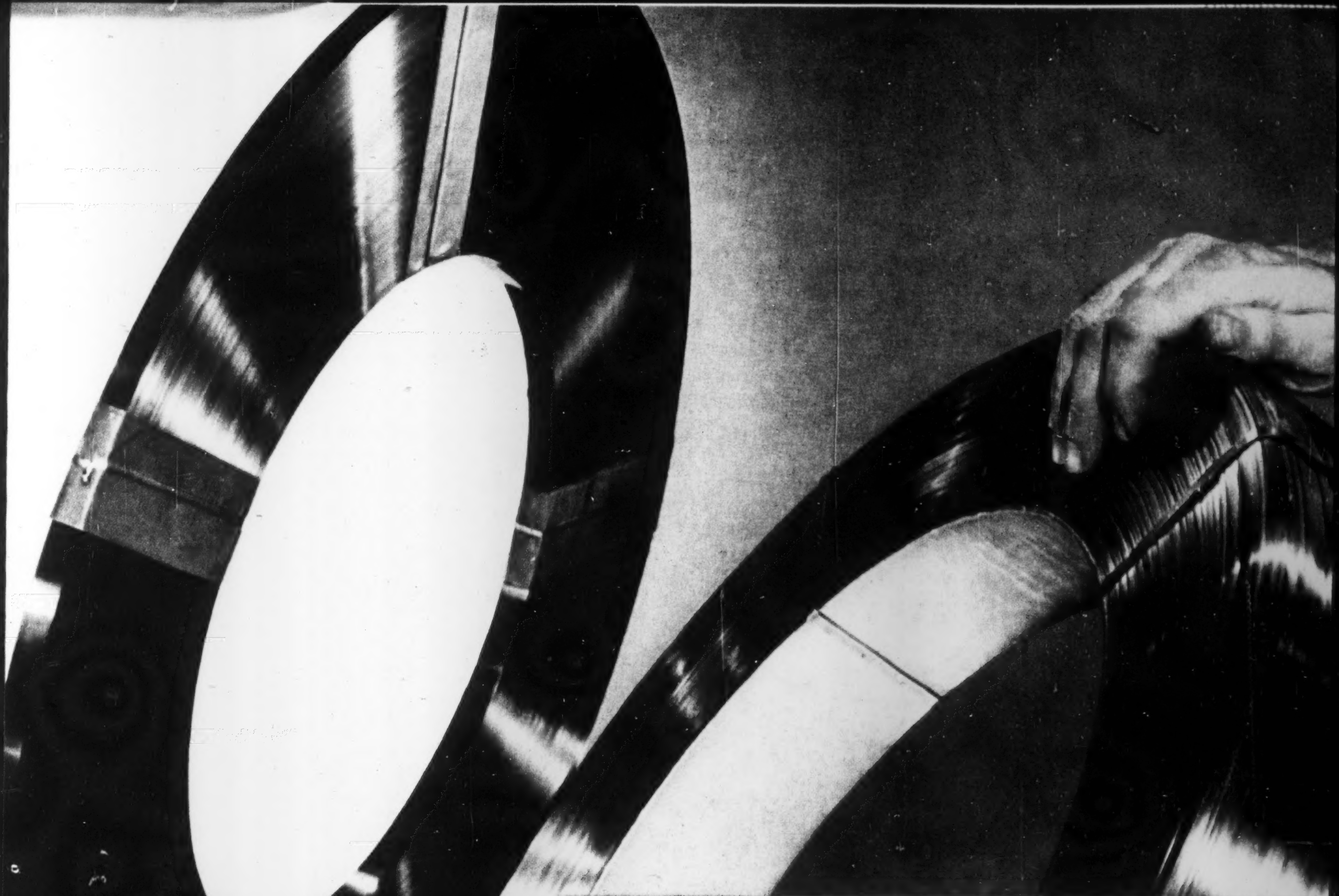
Actually, there's little chance of many of those proposals ever finding their way into the labor laws. The Republican Congress would balk. An indication of its mood on labor matters is that it refused to do anything about T-H in the session just ended. When the records are all in at the end of 1954, T-H will probably stand much as it now is, with the most important modifications in more lenient provisions for construction and other fields of temporary employment.

Now Is the Time

In the next 16 months you have a golden opportunity to reverse some of the labor relations trends that proved disastrous for Ohio Hoist and Falcon Bronze and that may prove disastrous for you. The climate is better for you to retain more of the benefits of improved productivity and to win greater employee loyalty and acceptance of the economic facts of life. The economic and political temper will be against headstrong labor action. Furthermore, the union chieftains will be partly distracted by their own inner organizational troubles.

Now is the time to set up better work standards, improve your employee communications, strengthen your industrial relations department and see that you have a good man in charge.

The Republican victory in 1952 indicates that the public is ready to listen to a new philosophy not only from politicians but from business, too. Are you ready to talk?



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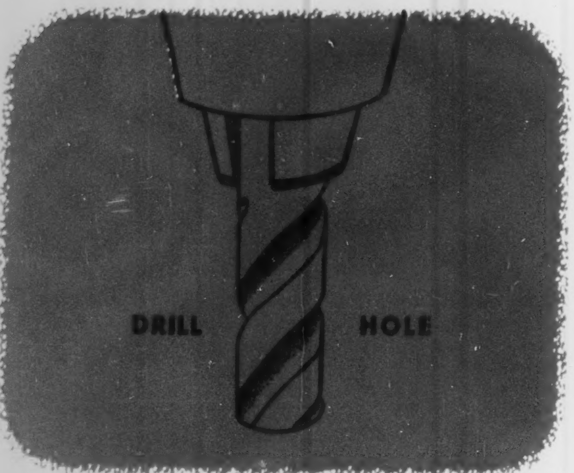

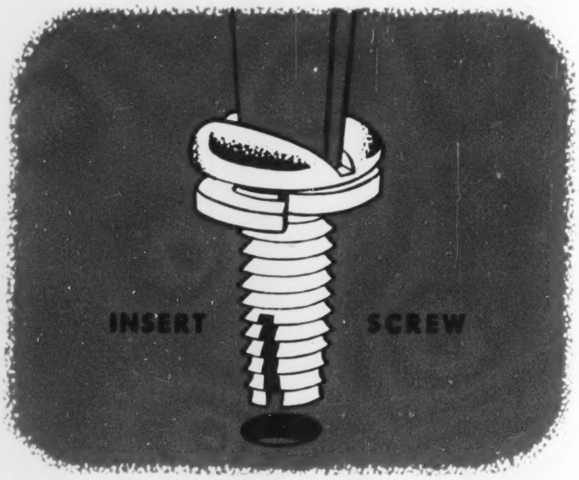
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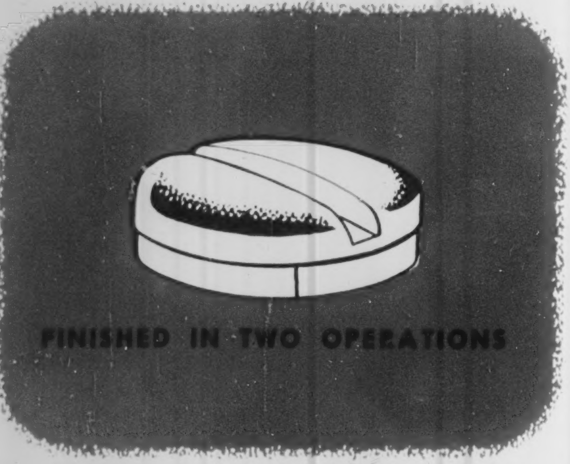
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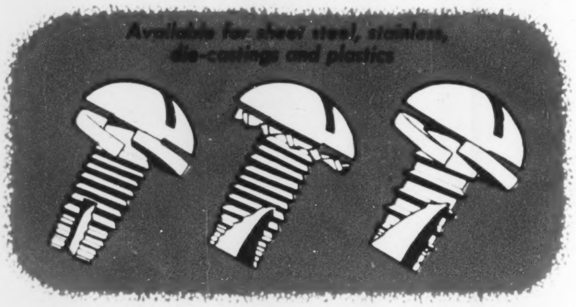
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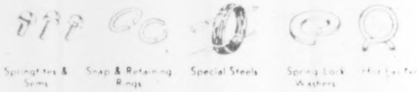
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Technical Outlook

TACONITE TEST—What is the best practice for charging taconite pellets and sinter concentrates into the blast furnace? To get the answer, Bureau of Mines will put a number of taconite runs through its experimental blast furnace at Pittsburgh.

HOT COMBINATION— Score another advance for powder metallurgy. Molybdenum and silica have been combined to form a product that resists oxygen, does not burn and will take up to 3000° F. Developed by American Electro Metal Corp., Yonkers, N. Y., its first application will be as a heating element in furnaces for making glass, ceramics and other high-melt metals.

STEEL IS CHEAPER— Bureau of Ordnance produces 85 per cent of its cartridge case requirements (sizes 20 mm to 5 inches in diameter) with steel by conventional deep-draw methods. Quantity produced justifies cost of facilities. In larger sizes, brass is used as basic material, because of facility costs and technical difficulties. Navy cartridge cases are given a zinc chromate coat to protect them against salt spray.

FIRST IN LINE— With engineering and design of a horizontal, direct extrusion press for the nonferrous metals industry out of the way, Sutton Engineering Co., Bellefonte, Pa., expects to complete its first machine in October.

OFF THE COB— Corn cob meal is being used as a dryer and polisher in metal plating. According to Agri-Indus Mfg. Co., Columbus, O., its product also polishes and deburrs stamped metal and cleans surfaces of steel plate.

FIRST-TEAM SUBS— Several alternate grades of boron steel machine as well or better than their equivalent standard alloy steels, according to Watertown Arsenal, Watertown, Mass. Grades compared in single-point, lathe-turning tests using high-speed-steel and carbide cutting tools: 4817H, 94B17, 1345, 14B45, 8640, 80B40, 4140, 81B40, 4340, 98B40, 86B45, 9262H and 50B60. Watertown says if annealing practices had been employed to produce microstructures identical with those of higher alloys, alternates would have demonstrated even better machinability.

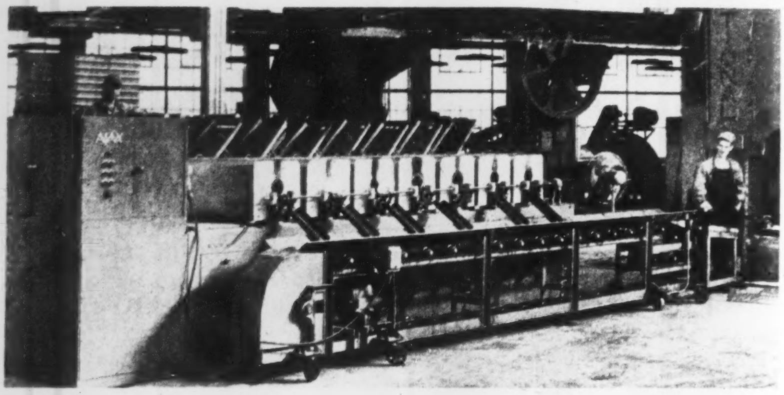
RETIRED— Carbide-lined, R16 die that drew more than 5000 tons of FS1117 and FS1118 steel without developing approach wear ring serious enough to require servicing was recently taken off the line at Wyckoff Steel Co., Putnam, Conn. Crack developed in the die, which was delivered by Carboloy Department of GE, Detroit, after 26 months of service. Finished size at delivery was 2.4315 inches, in a 6-inch taper base. When taken out of service, size was 2.434 inches.

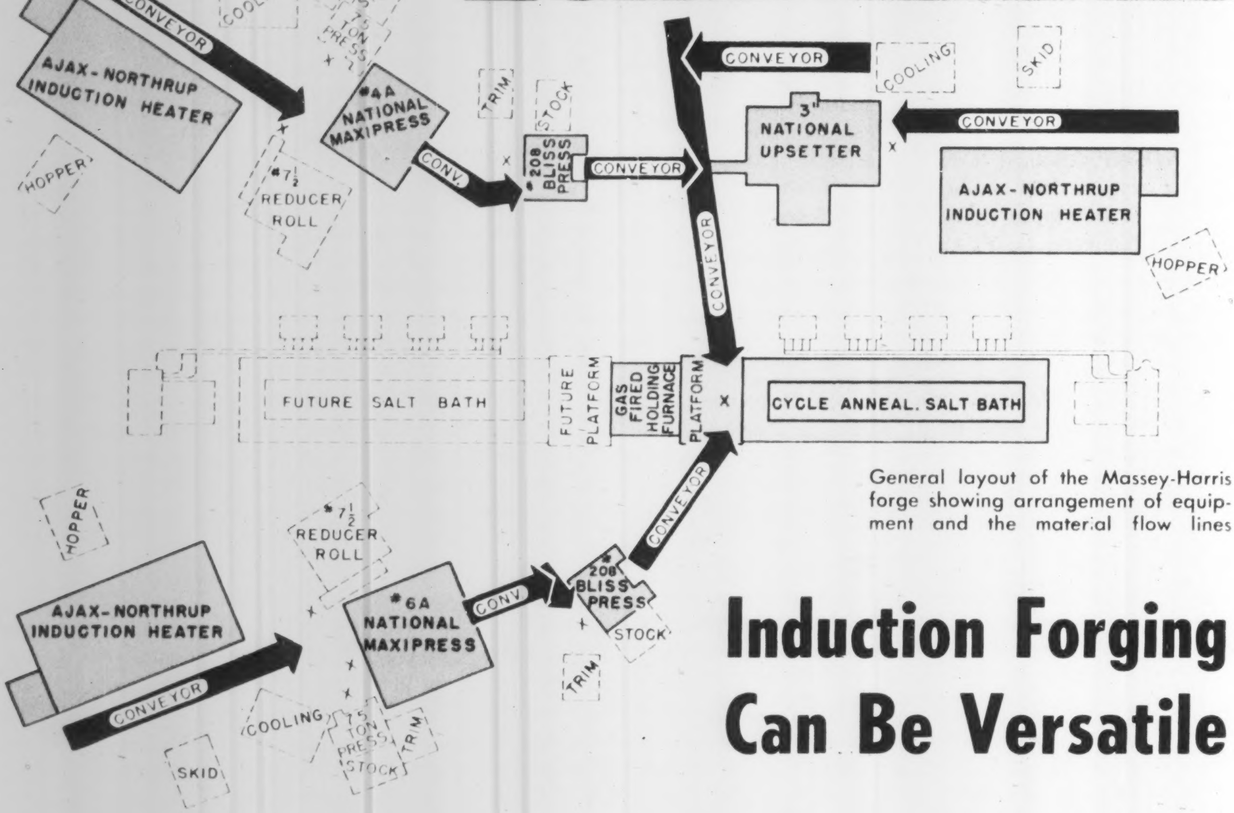
CLEANING UP— Swarf is removed from coolant tanks in the grinding department at Norton Co., Worcester, Mass., by use of a portable disposal tank. Transferring medium is compressed air. Vacuum in tank causes liquid to be drawn from coolant tank through an intake hose.

WHAT'S ON THE INSIDE— One of the X factors in turning out a variety of forgings is the interchangeability of heaters. How induction heaters fit into the picture is set out on p. 112 . . . Too often we don't worry about safety until after the accident. For tips on prevention, see p. 114. . . Finding out what is happening while it is happening spells control in steelmaking. Quantometer does this, p. 122. . . Ever wonder what has happened to the throatless press idea? There's a progress report on p. 130. . . . Why does aluminum stand the gaff in corrosive atmospheres? Built-in protection is the answer, p. 134. . . These and other informative articles are on the inside, including more standard testing procedures proposed by ASTM on p. 121.

Metalworking Outlook—p. 53   Market Outlook—p. 165

Bank of seven of the Ajax-Northrup induction heaters feeding uniformly heated billets in rapid timed sequence to the 1300-ton Maxipress at the Massey-Harris forge, Racine, Wis.




SKID
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CONVEYOR
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HOPPER
#4A NATIONAL MAXIPRESS
#7½ REDUCER ROLL
CONV.
TRIM
STOCK
#208 BLISS PRESS
CONVEYOR
CONVEYOR
COOLING
SKID
3" NATIONAL UPSETTER
CONVEYOR
AJAX-NORTHRUP INDUCTION HEATER
HOPPER
CONVEYOR
FUTURE SALT BATH
FUTURE PLATFORM
GAS FIRED HOLDING FURNACE
PLATFORM
CYCLE ANNEAL. SALT BATH
HOPPER
#7½ REDUCER ROLL
CONVEYOR
#208 BLISS PRESS
STOCK
AJAX-NORTHRUP INDUCTION HEATER
#6A NATIONAL MAXIPRESS
CONV.
TRIM
CONVEYOR
COOLING
75 TON PRESS
STOCK
TRIM
SKID

General layout of the Massey-Harris forge showing arrangement of equipment and the material flow lines

Induction Forging Can Be Versatile

Wide variety of parts coming off the presses at Massey-Harris focuses a new light on these production heaters. Big library of fixtures is key to speedy changeovers

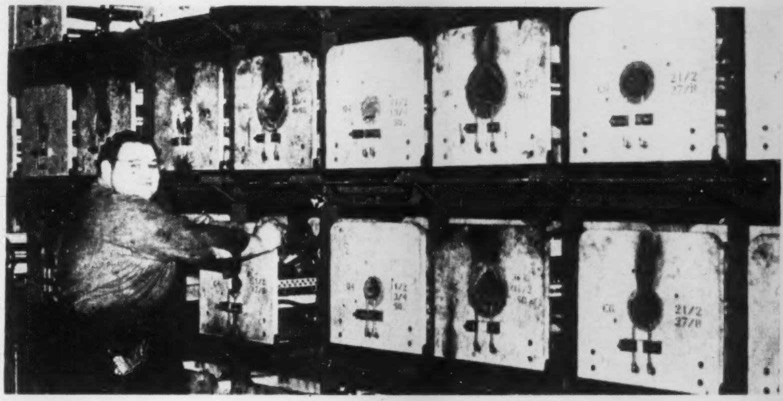
By FRANK T. CHESNUT
Ajax Electrothermic Corp.
Trenton, N. J.

ONE of the first all-induction-heated forges to compete in the peacetime production of automotive and tractor parts is meeting the expectations of its designers at Massey-Harris Co., Racine, Wis. Products include gears, steering arms, brake shafts, cultivator shanks and over a hundred other parts.

All the typical forging steels are represented, including 8620, 8720, 8617, 1045, 4140 etc., and all are heated to 2250° F for forging. Some of longer bars are selectively heated over an end or intermediate portion for upsetting or hot forming.

Forge Layout—After extensive planning, forge plant visits and idea swapping, Massey-Harris engineers decided that the induction forge would best meet their needs. The three Ajax-Northrup induction units chosen for the job are all 500 kw, nominally-rated, automatically-timed units, and they are spotted strategically near the Maxipresses and the upsetter (see plan). Each bank is composed of seven heater fixtures which can all be set for same heating job or seven different ones.

Obviously, once the dies on its press or upsetter are set, only one job may be run on each bank of heaters. If pieces are large and long, perhaps all seven heaters will



Individual Ajax-Northrup heaters are a relatively inexpensive part of the equipment. With these interchangeable heaters Massey-Harris can quickly adapt its forge for any of the hundreds of parts which it manufactures

be heating simultaneously, feeding billets to the press operator at regularly timed sequences. If billets are small, or forge cycle long, a single heater operating at 100 kw might keep the forge operator busy. Seldom are all seven operating simultaneously; three to five fixtures is more nearly the average run.

Power Plan—Electrical plant for the heaters consists of three generators each rated 500 kw, 800 v and 3000 cycles, which are driven by 800 hp induction motors. M-g sets are housed in separate, clean and well-ventilated rooms and are arranged for parallel operation on a single bus which in turn feeds the heaters. Any generator may feed any of the three banks of heaters, and if required, the total power may be channeled to a single bank of fixtures.

Each fixture unit is supplied with a full complement of power taps, a separate bank of capacitors, a transformer, a timer (interlocked with timers on other heaters in the bank) feeding and ejecting mechanisms, a contactor and protective relays.

Job Selection — Every new job that comes into the plant is checked for optimum efficiency and programming. Given billet size, its weight and production rate, fixtures are tentatively selected and test runs are made until best programming is achieved. Once this is done, a complete record is filed in a card index so that forge may be reset in advance of any rerun of the particular part.

Time for a setting up for a new job, however, is not very much greater than that for a job changeover. Average time for the latter is about 90 minutes, and since the changeover may be made while the press is down for new dies or between shifts, lost time is negligible.

Economic Picture — It takes roughly 0.150 kwh of generator power to heat one pound of steel to 2250° F which with a motor generator efficiency of 90 per cent, gives an over-all power consumption of 0.165 kwh per pound of steel forged. With power rate of $0.0117 per kwh, this is equivalent to $3.87 per ton of steel forged.

While this figure is somewhat higher than the cost of heating by fuel, overall economy favors induction heating because in general less steel is required, heating time is faster, less scale forms, the dies last longer, there are fewer rejects and working conditions are considerably better.

Heater Library—Big feature of the Massey-Harris forge, and the feature which perhaps makes for its greatest flexibility is its "library" of heater units and its card index for locating the proper fixture in a short time. Fixtures themselves are not expensive, and valuable production time with expensive generator and control equipment is saved by storing spare or substitute units for immediate use in emergencies or job changeovers.

Over sixty spare fixtures are kept on hand in the Massey-Harris library, and each is fully cataloged and indexed, not alone as to size and length of part to be heated, but as to capacitor arrangement, power taps, heating gradation, timing and feed requirements, etc.

Individual fixtures are built in two tandem sections for still greater flexibility. This arrangement allows for longer or shorter heating cycle as desired, allows for more attention to the section of the heater where charge is hottest, allows for more flexibility in heating of mid-sections of long bars and makes for easier maintenance and handling.

Failure Rate—Fixtures are of plain helical type lined with an air setting cement rammed behind a mandrel. Fewer than twelve linings have had to be replaced since the units went into operation over two years ago. Failures occur principally by abrasion of the lining material from billets having irregularly sheared ends and can be detected and repaired before more serious trouble develops.

Production Cycle — Cold billets are fed to the fixtures manually through feed chutes. Once in the chutes they are automatically fed through the heating fixtures by timed hydraulic pushers. If operated automatically, the first few and last few billets of a given production run are rejected as being unevenly heated, but by manual operation at the start and end of each such run, substantially all of the billets can be forged.

As each billet leaves its fixture, it is first engaged by power rolls which remove it fully from the coil and drop it onto a conveyor belt which rushes it immediately to the forge operator so that he does not have to move from his location at the forge. After the forging operation the part is carried by successive conveyors to the trimmer press and to the cyclic annealing furnace.

In heating an end or mid portion of a long bar, same fixtures are used but adjustment is more involved. Operation is usually manual with automatic timing. Again, only half of the two-section fixture is required, and by proper setting of the heating taps almost any desired temperature gradient can be obtained, even reheating of a bar-end left partially hot from a previous operation.

STOP TRUCK ACCIDENTS BEFORE THEY OCCUR

Sharp training and a tough operating code head off smashups. Here are a few tips on what to emphasize, where to put teeth in rules

By W. A. MEDDICK
Vice President
Elwell-Parker Electric Co.
Cleveland

IT MAKES no difference whether a company uses one or 1000 industrial trucks; driver training is a must.

The first step in any comprehensive safety program, no matter on what scale, must begin with the operators. One truck driven by an incompetent can do just as much damage in a small plant (often more in proportion) as a whole fleet in a large installation.

Experience of many firms shows a lighthearted approach to the acquisition of industrial trucks with thoughts confined to operating efficiency and reduced accident rate. They're right about economies inherent in mechanical handling. But invariably they find injuries to personnel and damage to materials have skyrocketed if a sound operating program didn't start when trucks were unloaded.

Use the Classroom—If yours is a large plant employing a fleet of trucks, your best move probably is to organize a driver training school where a complete course in operating practices can be taught.

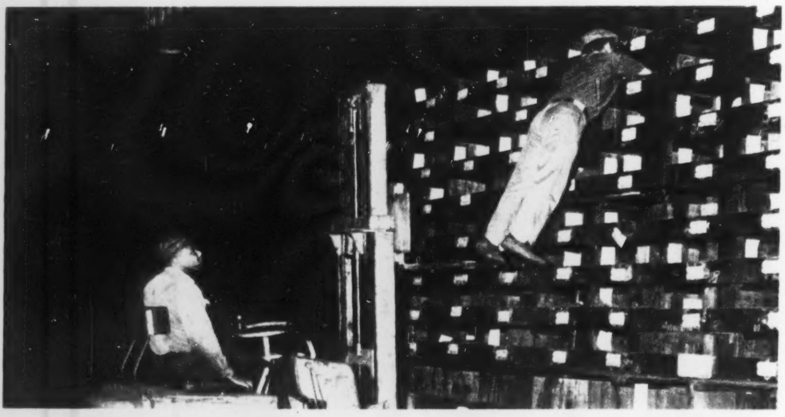
One firm, drawing on the experience of many years' schooling, prescribes a total of 16 hours training—a combination of class work and driving instruction—for operators who have some experience. For inexperienced men, the company ups the total to make the combined course run at least 32 hours. They say in either case sessions should proceed consecutively on a full-day basis.

Curriculum—Here are the mechanics of another successful program: New employees get a briefing on essentials from the instructor, then start on a primary obstacle course. Trainees learn to take trucks through an aisle with minimum 1-inch clearance and become adept at handling a vehicle in aisle intersections. They also receive instruction in spotting and picking up loads. Finally, the firm makes sure each student is clear on maintenance procedure, which he learns by use of training films and actual models.

This course is calculated to reach and teach everyone; even supervisors work with the company's trucks, so the whole staff gets the same education. Maintenance is stressed because keeping a truck in good shape heads off many accidents.

Defining Responsibility—Considerable weight is being given to the premise that effectiveness of the over-all safety program increases along with the amount of direct responsibility assigned to each driver. Some companies make the driver responsible for all accidents. They justify their somewhat adamant position by emphasizing that speed must always be sacrificed for absolute control and ability to stop the truck immediately when required.

Soundness of this approach is upheld by highway traffic laws in many states. The majority is most unsympathetic to drivers not in control, assigning them responsibility even though a vehicle



Most common result when a driver lends a helping lift is a compensation claim. It's less expensive to get the stockman a ladder for these jobs ahead stops unexpectedly and abruptly.

A FEW BASIC RULES . . . in effect for truck operators at one midwest plant show how stringent operating procedures may have to be to secure safe practices

1. Drivers must stop within 8 feet in open aisles; within 3 feet in narrow aisles, near machinery and in congested areas. A distance of at least 10 feet must be maintained between moving vehicles and extreme care exercised where floors are wet or greasy.

2. Trucks must be completely stopped and the horn sounded before: (a) entering doors of all buildings; (b) approaching blind corners; (c) turning into or crossing main aisles; and (d) entering ramps. If plant noise obscures the horn, drivers will dismount and reconnoiter on foot.

3. Vehicles must be stopped and started without skidding wheels.

4. Drivers must learn capacity of their trucks and lift no loads above that capacity.

5. Disabled trucks must be towed by another vehicle; they cannot be pushed.

Basic Practice—Naturally, it does no good to get tough with your drivers unless you have something to get across that will produce results. Most drivers can learn techniques. Sensible practice comes harder. Emphasizing the importance of these operating "musts" should help bring the safety factor to a profitable level.

One of the most flagrant violations of any plant's safety practice is movement of loads that obstruct the truck operator's view. If too-large loads are unavoidable, have the man move his truck backward. In addition, loads should be carried as low as possible. Result of a free hand on the "raise" control is threefold, all contributing to lack of control: It obstructs the operator's view, cuts down maneuverability, damages stability.

Proper Positioning — Loads should never be picked up with forks off center. Probable result: The load dumps, if not when raised then at the first bump, and whatever or whoever happens to be nearby gets hurt. For the same reason, loads should be prepared so the weight of the transported unit cannot shift. One way to do this is to be sure loose loads and liquids are carried in proper containers.

If the truck has a tilting device, use it. Tilted uprights bring the load back 8 to 10 degrees and improve balance, particularly when rounding corners or if a quick stop is required.

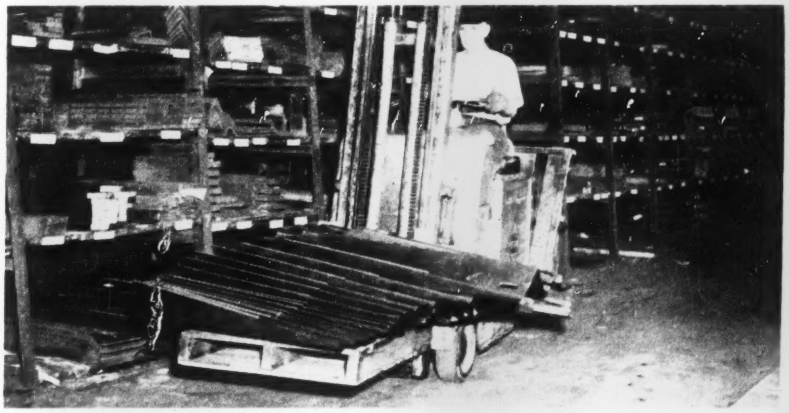
Personnel—Never allow personnel, other than the operator himself, to operate or even to ride an industrial truck. Unauthorized workers hitching rides on forks and platforms, clinging to battery or engine compartment, or crowding the operator only invite compensation claims. Except under close supervision, don't even let your drivers give someone a lift to reach inaccessible places.

Have drivers use, but not abuse the horn. Give it several short blasts when approaching intersections, blind corners and swinging doors. Pedestrians walking away from a truck should receive ample warning of the vehicle's approach. But crack down on the drivers' natural urge to get too close before signaling. These practical jokers can be hazardous.

Doors that open by remote control save considerable time. However, they are not meant to be nonstop throughways. The incautious driver often meets disaster when he cannot stop safely if the automatic mechanism fails or if the other side of the door is not clear. Another point to emphasize: Trucks carried on elevators should have all power shut off and brakes set.

Making Rules Work—Give your drivers a few common sense breaks that will make their job easier. Keep travel areas free from ruts, grease, oil, pits, obstacles, etc. Operators reporting unsafe conditions like poor lighting deserve immediate action. Define doorways, corners and other travel-ways with bright colors or hashmarks; outline pipes, machinery and other obstructions in contrasting colors.

Finally, make sure every collision is reported to proper authority, even if no damage is done. You can make truck handling pay only if you can find out what went wrong and never let it happen again.



This load of stampings will probably break or rip something or someone if it manages to stay on at all. It takes no longer to load in the center

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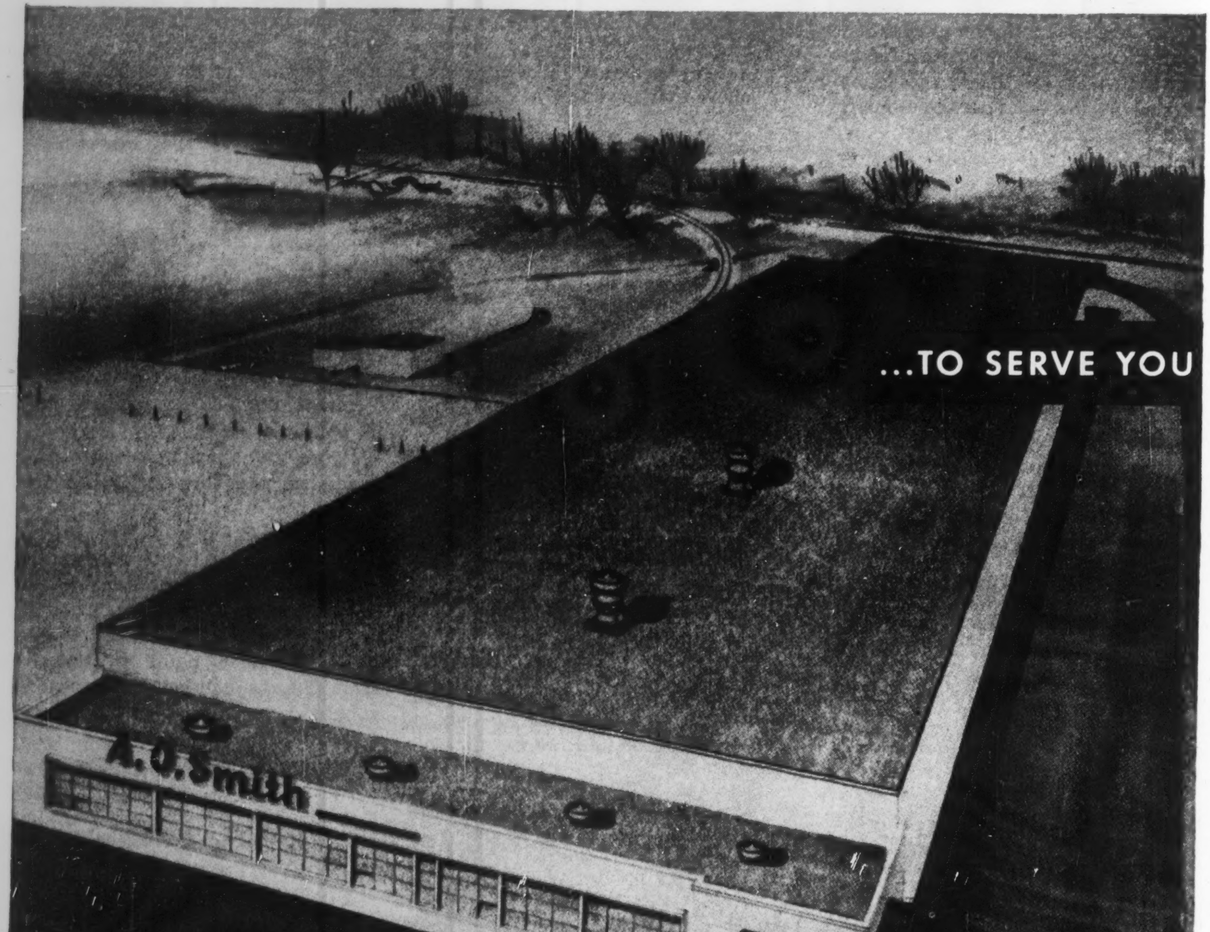

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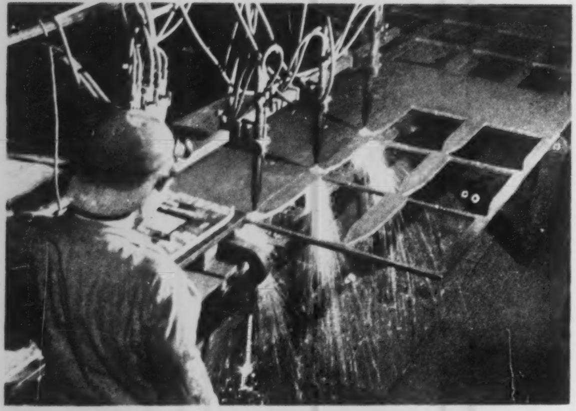
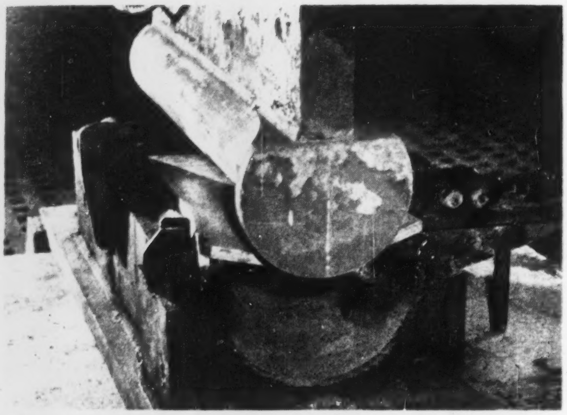
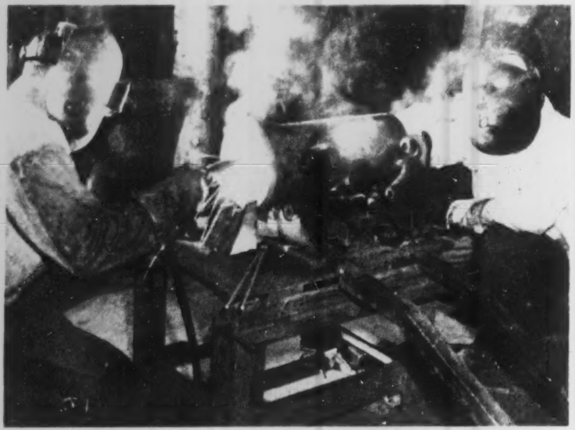


Triple-torch gas cutting setup automatically routs out blanks for bitt halves from $\frac{3}{4}$-inch hull plating material. The bitts vary in diameter from 8 inches at the base and 12 inches at the cap on up, depending on requirements



Closeup of the punch and die arrangement is seen in a 750-ton press which cold-forms the steel blanks to the proper flared shape for the bitt half. When halves are joined, work starts at flared end without edge preparation

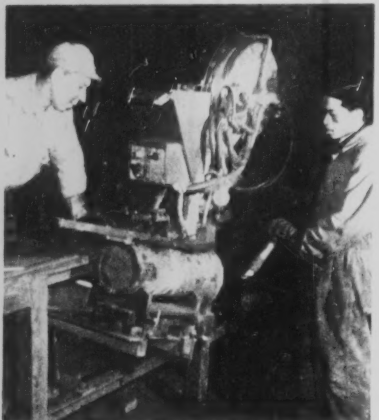


Assembled in this fixture, the two halves are manually tack welded by electric arc method and a sealer bead run down the full inside seam. After welding, assembly is rolled down slide to await completion of the outer seam

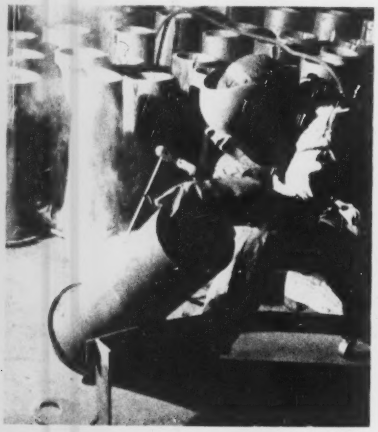
Tailored for Welding

DESIGN of barge towing bitts to make use of welded steel plate construction has been completed by the Engineering Works Division, Dravo Corp., Neville Island, Pittsburgh. The job is so complete even the bitt posts are extended through barge decks and welded to hull superstructures.

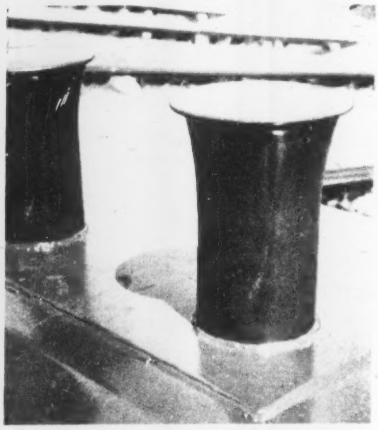
The division uses $\frac{3}{4}$-inch hull plating material in accordance with American Bureau of Shipping requirements and employs Lincoln Electric Co.'s equipment throughout the process. Sequence of operations involved in forming and welding the bitts for fitting to barges is seen in the accompanying series of on-the-job photographs.



In outer seam welding, holding fixture is rocked to level position as head progresses. Operator with exhaust hose removes excess flux from trough

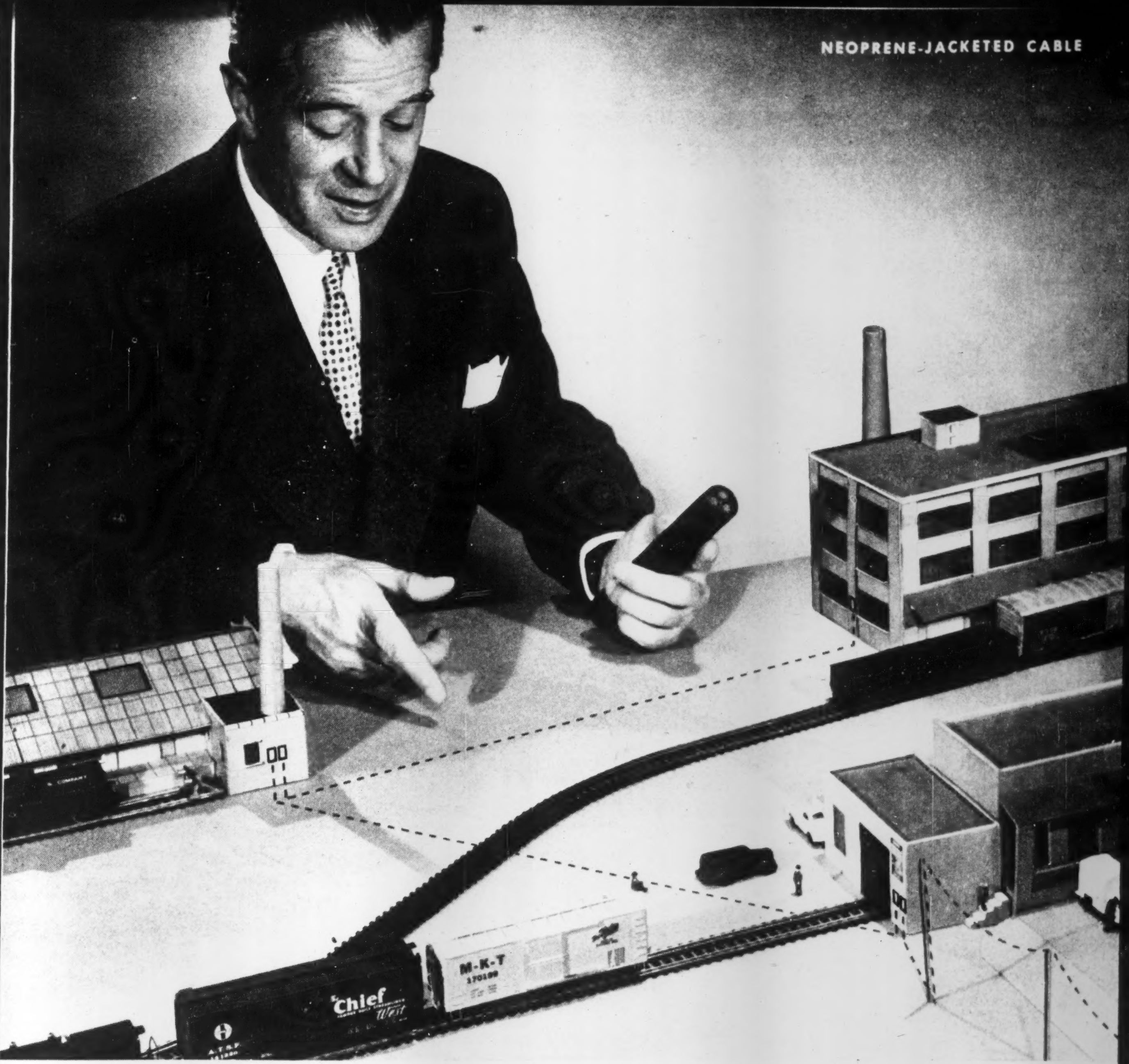


Caps are welded manually to cylinder sections. A simple rail and roller stool assists in positioning and turning the piece to gain fast operation



In the final product, flared cylindrical sections are composed of welded plates. Post of the bitt extends through deck and is welded to hull structure

NEOPRENE-JACKETED CABLE



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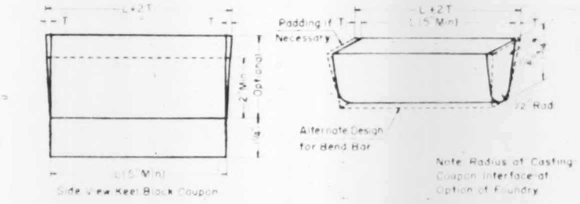
L+2T
T
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2" Min
Optional
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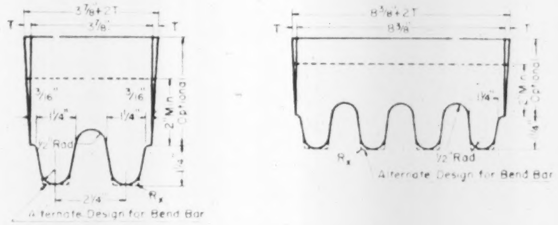
L(5" Min)
Side View Keel Block Coupon
Padding if Necessary
L+2T
L(5" Min)
T
T
1
¾"
1¼"
½" Rad
Alternate Design for Bend Bar
Note: Radius of Casting Coupon Interface at Option of Foundry

ASTM design for double keel block test coupon (left) and design for attached coupon (right). Minimum length specified may increase at option of foundry


3⅞"+2T
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Rx
Alternate Design for Bend Bar
8⅜"+2T
8⅜"
T
T
1¼"
2" Min
Optional
1¼"
Rx
½" Rad
Alternate Design for Bend Bar

Alternate design for bend bar as recommended by ASTM. Tensile, bend and impact bars will be taken from lower part of leg. Number of legs is optional

DETAILS OF TEST COUPON DESIGN FOR CASTINGS

LEG DESIGN

1. Length . . . . 5 inch minimum. Maximum at option of foundry.
2. End taper . . . . use and size optional.
3. Height . . . . 1¼ inch.
4. Top width . . . . 1¼ inch, but cross-sectional area and length of standard coupon may be increased at option of foundry.
5. Bottom radius . . . . ½ inch maximum.
6. Spacing between legs . . . . ½-inch radius.
7. Location of test bars . . . . Tensile, bend and impact bars will be taken from lower portion of leg. Alternate design is specified for bend bar.
8. Number of legs . . . . optional as long as (6) is followed.
9. Rx . . . . radius from 0 to approximately 1/16 inch.

RISER DESIGN

1. Length . . . . Length at base will be same at top length of leg.
2. Width . . . . Width at base of multiple-leg coupon shall be $n(2\frac{1}{4})-\frac{5}{8}$, where n equals number of legs attached to coupon.
3. Riser taper . . . . use and size at option of foundry.
4. Height . . . . Minimum is 2 inches. Maximum optional.

ASTM Mechanical Tests for Steel Castings

Standards recommended cover preparation of test coupons, their dimensions and tolerances. Optional specs also are set forth

STANDARDS for the mechanical testing of cast steel products have been adopted by the American Society for Testing Materials.

Over-all scope of the ASTM undertaking also includes wrought, bar and tubular steel products. In general, methods and procedures recommended for wrought steel products (see STEEL, Aug. 31, p. 75) shall be followed in the testing of cast products.

Of course, special specifications are required for the preparation of cast steel test specimens.

Coupons — Where practicable, ASTM recommends attaching tension test coupons to casting. If design does not permit this, test coupons shall be cast attached to separate cast blocks.

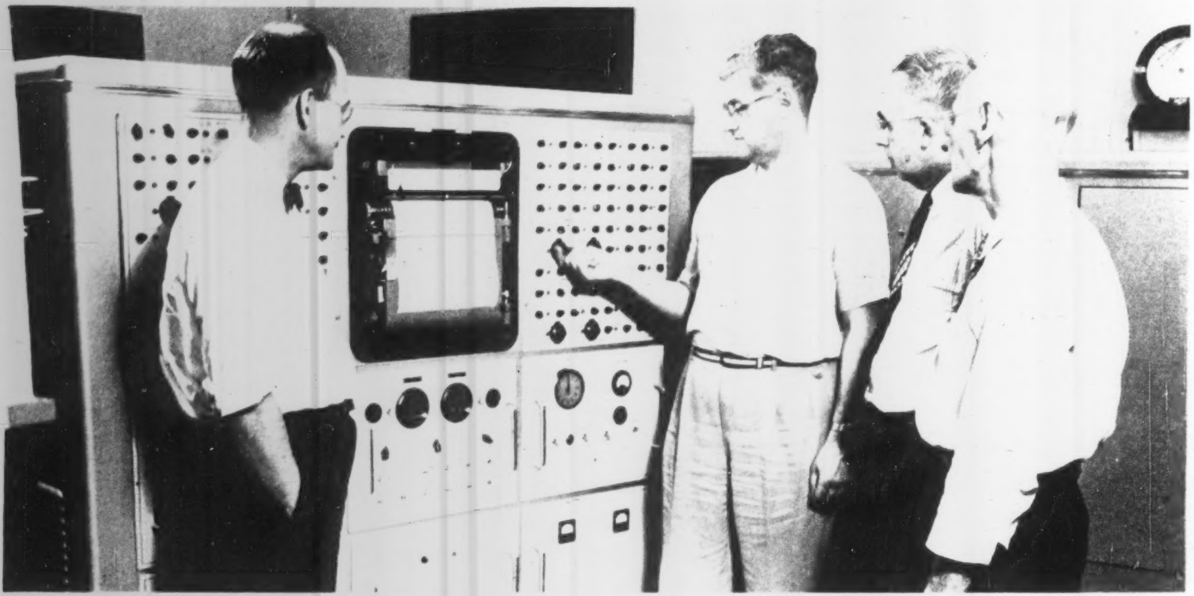
When a bend bar is required, ASTM sets out an alternate design for coupons.

Recommended dimensions and tolerances for standard coupons pertain to large and heavy steel castings, but their cross-sectional area and length may be increased at the option of the foundry.

Legs, Risers—Leg design calls for a minimum length of 5 inches. But, of course, length may be increased to accommodate additional test bars. Use and size of end taper also are optional. Only control as to the number of legs attached to the coupon is that a uniform ½ inch radius will be used between legs.

Minimum height of the riser shall be 2 inches. Maximum is not given because: 1. Many risers are cast open. 2. Different compositions may require variation in risering for soundness. 3. Different pouring temperatures may require variation in risering for soundness.

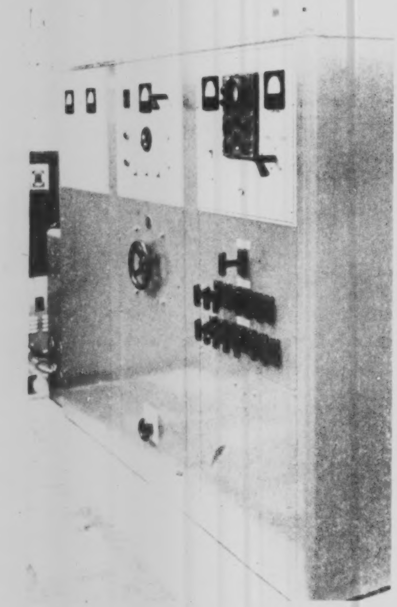
As with leg design, taper is optional. Length of riser at top of base will be same as top length of leg. Thus length of riser at top depends on amount of taper added to riser.



Chief spectrographer, S. N. Dibble, demonstrates the quantometer for several of his colleagues at Sanderson-Halcomb works. In background, to right of recorder, are spark stand and defraction grading units

Quick Analysis Leads To Better Steel

Quantometer installations at two Crucible Steel works gives melters better control over characteristics of various heats. Test results come back in matter of minutes



On the opposite wall from the recorder is this power control unit which provides carefully-controlled and reproducible currents for burning the test samples in the spark stand

MORE TESTS in less time, which gives the melter better control over the chemical characteristics of individual heats, is a reality at Crucible Steel's Syracuse, N. Y., and Midland, Pa., mills. Installation of a production quantometer at each of these operations cuts heat analysis time from a half-hour to a few minutes.

Depending upon the elements in the steel a complete analysis could not always be obtained during the melting period. Now, in a matter of minutes, a test can be sent from the melting shop through a pneumatic tube to the laboratory. The sample is polished, excited by arc or spark in the quantometer, and the complete chemical analysis of all metallic elements present read instantly from a chart and reported back to the melters.

Unique Feature—The Syracuse instrument is the first production control instrument marketed for the complete chemical analysis of tool, high speed, stainless, low alloy, and high temperature alloy steels. This instrument is unique in that it will analyze material which is either iron base, colbalt base, or nickel base. It utilizes every available electrical channel which the manufacturer can build into an instrument designed for routine control. The Midland instrument is equipped to chemically analyze stainless, low alloy and pig iron.

How It works—Unit consists of three parts: A high precision

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N ANY transaction involving the high investment required to build a blast-furnace, a steel plant, a sintering plant or a rolling mill, the ability of that plant to perform up to specifications *must be assured.*

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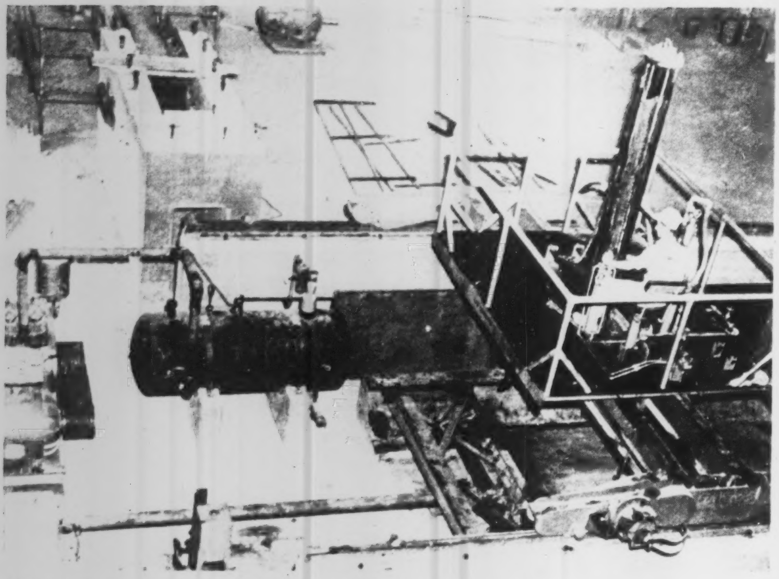

Slab Breaker for Ferro-Alloys

Breaking alloy slabs and loading chunks into cars is a 15-minute job with this pneumatic machine designed and built by R.P.B. Corp., Los Angeles. Dollie-mounted unit moves to one end of its track while slab is placed on the anvil; then machine moves back, breaks slab into the desired pieces and returns to end of runway. Hydraulic bulldozer follows by pushing material into the cars

---

source unit, a spectrometer and a recording console. All are housed in an air-conditioned, humidity-controlled room to insure the highest accuracy and precision obtainable.

High precision source unit delivers a discharge current rigidly and reproducibly controlled as to voltage, amperage, frequency and wave form. This discharge current is applied to the steel sample to excite the atoms of the various elements present. Each element radiates light in a certain portion of the spectrum.

Read Direct—The spectrometer breaks up this light by a diffraction grating, and the spectrum line for each element is then allowed to fall on a photomultiplier tube.

Output of tube charges a condenser, charge is measured on recording console, and the result is recorded as a line on a chart. For many alloys, this can be read directly as per cent concentration, for some alloys some further calculation is necessary.

Discharge time is twenty seconds; reading is about three seconds per element. Thus a complete analysis, including preparation of the sample, can be done in about ten minutes. While both instruments are operative now, it will be several months before they are used in actual production heats.

Tailor Made—Quantometers were built by the Applied Research Laboratories, Glendale, Calif., to fit the particular needs of a laboratory which is required to meet the specifications of what is believed to be the most varied range of steel compositions to be found in any one plant in America. Crucible's Sanderson-Halcomb Works (Syracuse), a pioneer producer of tool steels, also manufactures a full range of stainless and heat-resisting steels for a variety of reuses.

Quantometer results in better control of residual elements formerly determined only after the steel was in solid form. It is now possible to insure a more consistent product from heat to heat, so that the customer can rely on improved uniformity of the steel and its ultimate value in subsequent heat treating and processing operations.

Electrode-Selector Chart

A four-page electrode-selector chart designed to present information on the complete line of GE welding electrodes has been announced as available from the General Electric Co., Schenectady 5, N. Y.

The chart contains condensed data on the company's line of mild steel, low hydrogen-low alloy, low alloy-high tensile, hard-surfacing, and stainless steel electrodes.

Tabular material includes welded properties, metal deposit analysis, technique, type of specification requirements met, major competitive types, description and advantages, and application data for each type of electrode listed.

LPG Truck Models Expand

Motor truck division of International Harvester Co. reports it has placed in production five medium-duty models in the R-160 series with liquefied petroleum gas fuel systems. According to the company, it is the only truck manufacturer to offer Underwriters' Laboratories-listed factory-installed LPG fuel systems in this medium weight classification.

The latest series of LPG-powered models ranges in gross vehicle weight from 14,000 to 17,000 pounds.

Models are called the RP-160, RP-161, RP-162, RP-164 Loadstar for heavy hauling, and RP-165 Roadliner for over-the-road tractor service. Engine is 108-hp, valve-in-head.

Compression ratio of 8.4 plus added horsepower and torque characteristics may be obtained in the SD-240 with LPG fuel system through installation of 10,000-foot pistons.

Add Mobility to Your Laboratory

An illustrated booklet published by Fisher Scientific Co. gives engineering and design features of the firm's first flexible, unitized laboratory-on-wheels, named the Mobilab.

This discussion of how to customize a laboratory with standard parts can be obtained by writing to the company at 717 Forbes St., Pittsburgh 19.

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With plant modernization in mind . . . or new plants in design—if coolant systems are part of the plan, complete the picture with DELPARK *Central Filtration.*

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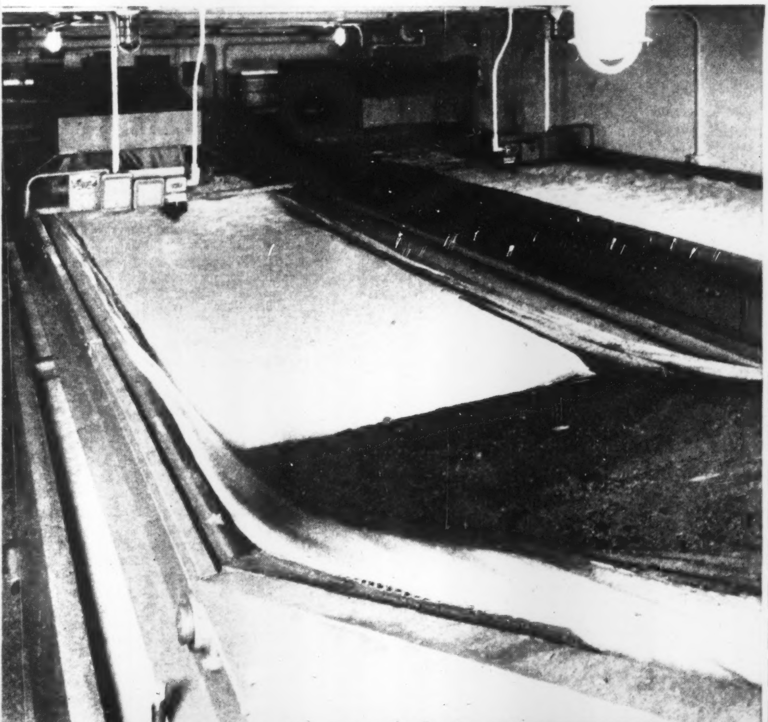

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Chrysler Corporation
Consolidated Vultee Aircraft
Diamond Match Company
Dow Chemical Company
Frigidaire
General Electric Company
General Motors (Pontiac Div.)
Goodyear Tire & Rubber Co.
Great Lakes Steel Corp.
International Harvester
Niagara-Mohawk Power & Light
North Carolina Pulp & Paper
Northern Natural Gas Co.
Oliver J. Olsen Shipbuilding
Packard Motor Car Company
Pennsylvania Railroad
Pittsburgh Plate Glass Co.
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Sacony Vacuum Oil Company
Shell Oil Company
A. O. Smith Corporation
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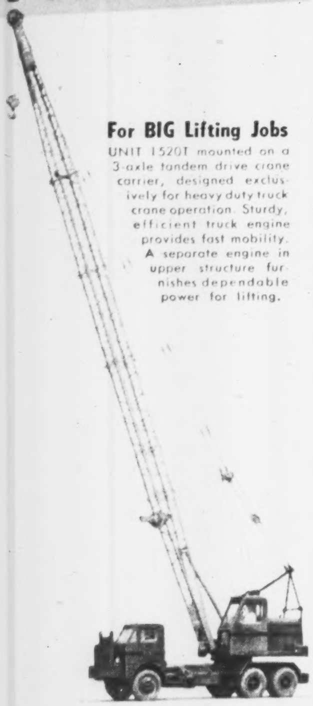
Weyerhauser Timber Co.



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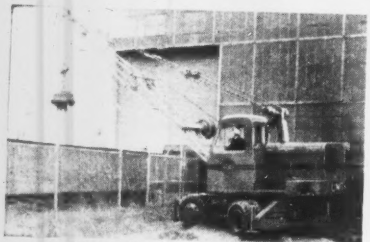

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CALENDAR
OF MEETINGS

September 6-11, American Chemical Society: Fall meeting, Hotel Conrad Hilton, Chicago. Society address: 1155—16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

September 9, Material Handling Institute: Fall meeting, Hotel Cleveland, Cleveland. Institute address: 813 Clark Bldg., Pittsburgh 22. Managing director: R. Kennedy Hanson.

September 9-11, Compressed Air & Gas Institute: Fall meeting, Fishers Island Country Club, Fishers Island, N. Y. Institute address: 122 E. 42nd St., New York 17. Secretary: Frank P. Anderson.

September 9-11, Association for Computing Machinery: Annual meeting, Massachusetts Institute of Technology, Cambridge, Mass. Information: Dr. F. M. Verzuh, Massachusetts Institute of Technology, Cambridge 39, Mass.

September 10-12, Rocky Mountain Management Club: Rocky Mountain industrial exposition, University of Denver arena. Club address: 1031 15th St., Denver 2. Executive secretary-treasurer: Harold S. Craig.

September 11-13, Metal Powder Association: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 13-16, Electrochemical Society Inc.: Fall meeting, Ocean Terrace hotel, Wrightsville Beach, N. Carolina. Society address: 216 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

September 13-16, American Institute of Chemical Engineers: Fall meeting, Hotel Fairmont, San Francisco. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

September 14-15, American Machine Tool Distributors Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thomas A. Fernley Jr.

September 14-15, American Hot Dip Galvanizers Association Inc.: Semi-annual meeting, Statler hotel, Cleveland. Association address: 1506 First National Bank Bldg., Pittsburgh 22. Secretary-treasurer: Stuart J. Swensson.

September 14-16, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: Charles F. Weil.

September 14-17, Society of Automotive Engineers Inc.: National tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 14-18, Industrial Engineering Conference: Michigan State College, East Lansing, Mich. Information: James M. Apple, Dept. of Mechanical Engineering, Michigan State College, East Lansing, Mich.

September 16-18, Porcelain Enamel Institute: Shop practice forum, Ohio State University, Columbus, O. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

September 17, Material Handling Institute: Closed meeting with Wayne University and Detroit Board of Commerce on control and management of major investments in material handling, Engineering Society of Detroit, Rackham Memorial. Institute address: 813 Clark Bldg., Pittsburgh 22. Managing director, R. Kennedy Hanson.

September 17-18, National Foundry Association: Annual meeting, Plaza hotel, New York. Association address: 53 W. Jackson Blvd., Chicago 4. Executive secretary: Charles T. Sheehan.

September 18, Wire Association: Nonferrous division's Waterbury regional meeting, Elton hotel, Waterbury, Conn. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

(Continued on P. 129)

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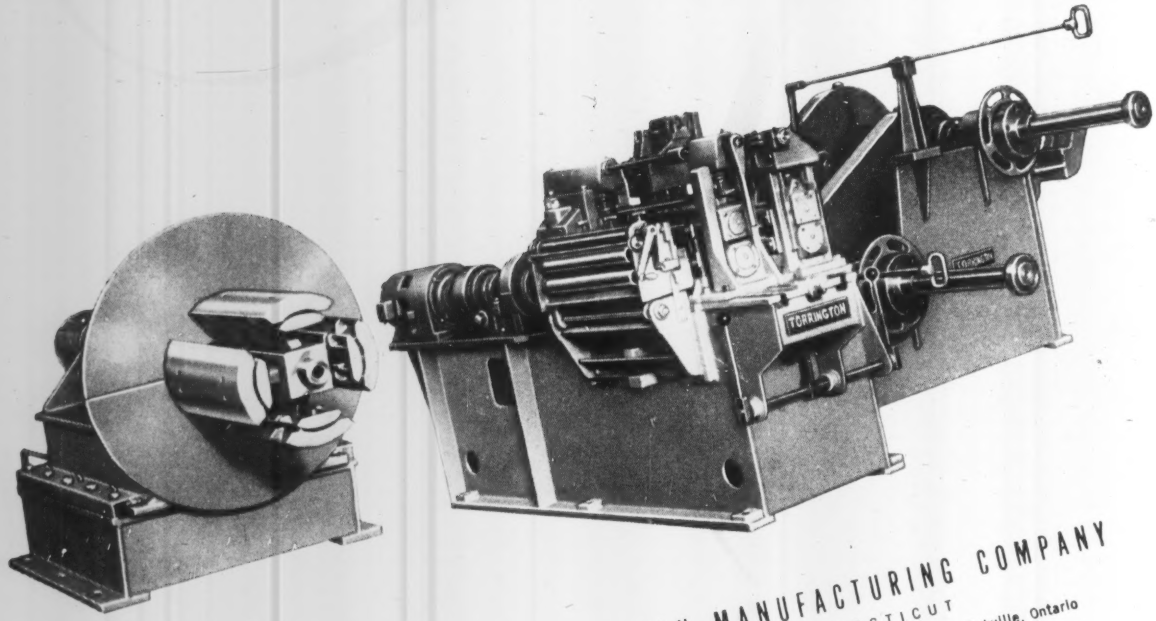

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(Continued from P. 126)

September 18-19, American Ceramic Society: Refractories division meeting, Bedford Springs Hotel, Bedford, Pa. Society address: 2525 N. High St., Columbus 2, O. General secretary: Charles S. Pearce.

September 20-23, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y. Association address: 122 S. Michigan Ave., Chicago 3. Commissioner: Charles L. Blatchford.

September 20-23, Packaging Machinery Manufacturers Institute: Annual meeting, Skytop Lodge, Skytop, Pa. Institute address: 342 Madison Ave., New York 17. Secretary-treasurer: Helen L. Stratton.

September 20-23, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Annual convention, Hotel Waldorf-Astoria, New York. Institute address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

September 21, Cutting Tool Manufacturers Association: Fall meeting, Lochmoor Club, Detroit. Association address: 416 Penobscot Bldg., Detroit 26. Secretary: M. J. Ewald.

September 21-22, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

September 21-23, Truck Body & Equipment Association Inc.: Annual meeting, Sheraton-Gibson hotel, Cincinnati. Association address: 1122 DuPont Circle Bldg., Washington 6. Executive manager: Arthur J. Nuesse.

September 21-24, American Mining Congress: Annual metal and nonmetallic mineral mining convention, Olympic hotel, Seattle. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-25, Instrument Society of America: National instrument conference and exhibit, Hotels Morrison and Sherman, Chicago. Society address: 1319 Allegheny Ave., Pittsburgh. Manager: P. V. Jones Jr.

September 23-25, National Industrial Conference Board Inc.: General session for all associates on marketing. Hotel Waldorf-Astoria, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

September 23-26, National Association of Foremen: Annual convention, Milwaukee. Association address: 321 W. 1st St., Dayton 2, O.

September 24-27, American Refractories Institute: Fall Meeting, Broadmoor hotel, Colorado Springs, Colo. Institute address: 1872 Railway Exchange Bldg., St. Louis 1, President: W. J. Westphalen.

September 25, Malleable Founders' Society: General meeting, Hotel Cleveland, Cleveland. Society address: 1800 Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

September 28-30, American Management Association: Personnel conference, Hotel Statler, New York. Association address: 330 W. 42nd St., New York 36. President: Lawrence A. Appley.

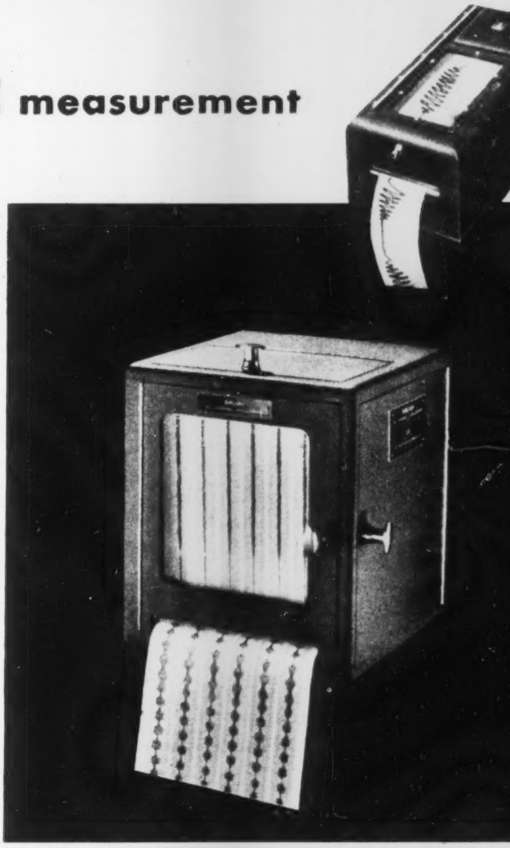
September 28-30, National Electronics Conference Inc.: Annual conference, Hotel Sherman, Chicago. Conference address: 852 E. 83rd St., Chicago. Executive secretary: Karl Kramer.

September 28-October 1, Association of Iron & Steel Engineers: Annual meeting, Hotel William Penn, Pittsburgh. Association address: 1010 Empire Bldg., Pittsburgh. Managing director: T. J. Ess.

September 29-October 3, Society of Automotive Engineers Inc.: National aeronautics meeting, aircraft engineering display and aircraft production forum, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 30-October 2, Porcelain Enamel Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

October 6-8, American Institute of Electrical Engineers: Conference on application of motors to air-moving equipment and symposium on induction motors, Hotel Van Orman, Ft. Wayne, Ind. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.



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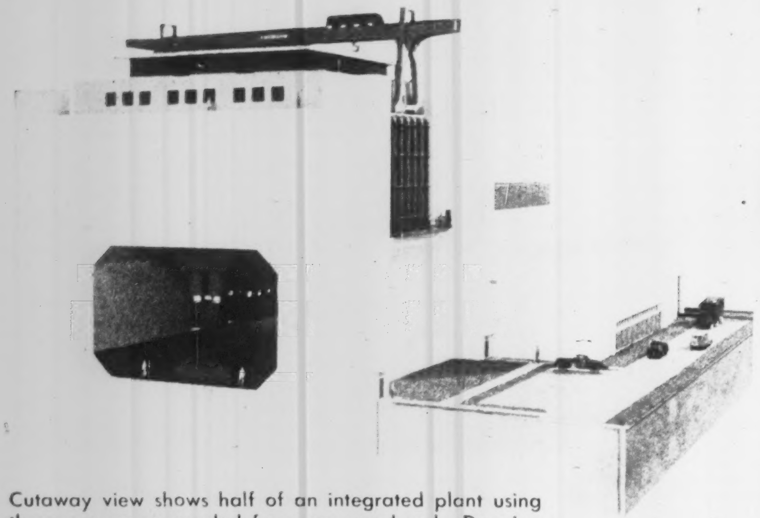
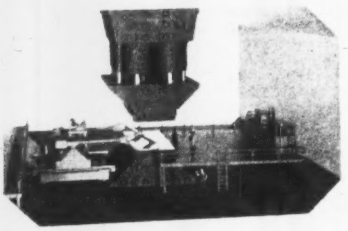
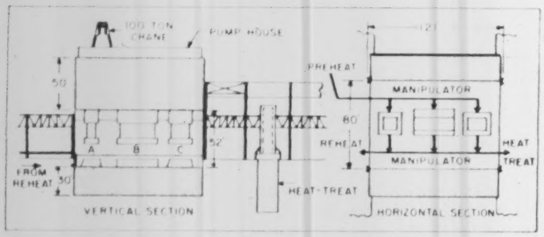


Cutaway view shows half of an integrated plant using three presses suspended from one overhead. Drawing shows production line for cogging, forging, trimming



This single, 75,000-ton unit illustrates 360-degree access for handling work, placing and removing dies. The pump house and Gantry-type cranes also are shown



Big Press

TAKES ON NEW DIMENSIONS

Fabricators of large formed metal components show interest in several throatless presses suspended from single concrete press structure

LATEST reports on the gigantic throatless press indicate it has taken on new dimensions since it was announced (STEEL, Jan. 12, 1953, p. 76) by Austin Co., Cleveland, and Hydraulic Press Mfg. Co., Mt. Gilead, O.

Last January, size (capacities ranging from 20,000 to 100,000 tons) was the story. Now, on the strength of reactions of leading aircraft producers and other fabricators of large formed metal components who have seen their models, Austin and HPM, co-owners of the Throatless Press Co., Cleveland, report interest is keenest in possibility of operating several presses within a single throatless press structure.

Originally projected as a 75,000-ton forging press, which the models represent, the concept also appears to offer opportunities for Guerin, Hidraw and diequenching applications. Since press components used for uniform or non-uniform braking of large sections could also be suspended from the same frame which serves other forming operations, opportunities for close co-ordination of related but dissimilar press operations are becoming apparent. These might include "bulldozing" side actions, as well as single, double or triple action pressure applications.

Package Unit—Idea of using more than one throatless press suspended from a single roof opens the possibility for integrated operations. Such a plant has been conceived by the company. It includes a central structure for cogging, forging and trimming.

In this installation, the single concrete overhead can be considerably less than total press capacity. To take care of the surplus load, pressure strokes of several presses would be alternated.

Prospects — Company officials say that several firms with king-size application needs are interested in the combination press idea. Although it was aimed primarily at the aircraft industry, its industrial potential is the topic of much speculation. It is within the realm of possibility, for instance, that the press could be used to form the side of a metal freight car in one operation if sheets of sufficient size were available.

Engineering imagination has been stimulated by the fact that the press does not have a confined throat. Head of the press (or presses) is suspended from an overhead section of a monolithic concrete structure. Strain rods or tension members are not needed to connect press head and bed.

Overhead mass, including prestressed concrete, pump house and a Gantry-type crane, provides the counterforce, and the "throat" is the distance between side walls. For capacities of 75,000 tons and under, the company places the minimum distance between side walls at 80 feet. Distances could be greater, they add, for larger presses.

Fundamental configuration of the press provides for full 360-degree accessibility to its working area; press area can be of any reasonable desired dimension; and component parts of bed and head can be sectional. Practical import of the latter point is that bed and head can be machined on existing equipment, shipped and field-installed without presenting new problems.

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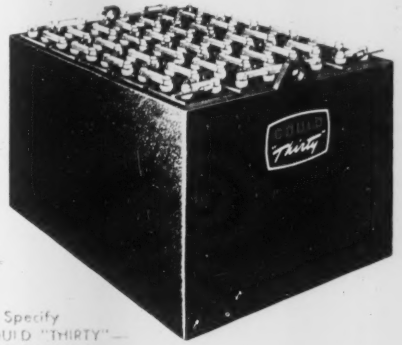

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General features of the Burroughs Laboratory Computer include: Magnetic drum memory systems; punched paper tape input and output facilities, including photo-electric read-in; and extensive checking circuits to avoid error.

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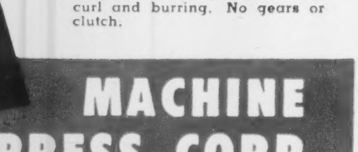

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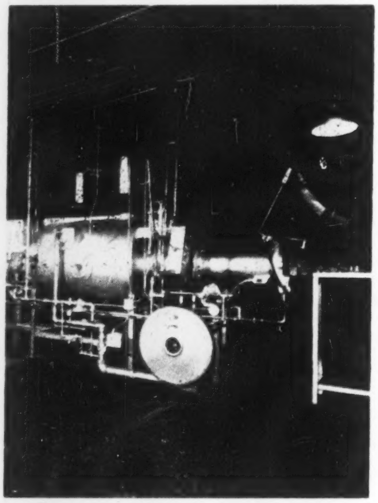
Iron Lung For Sick Metals

Nauseous reaction of type 305 18-8 stainless to heat-treating yields to muffle furnace

IN THE PAST, heat treating of stainless steel has often made the metal "ill," as well as the heat treater, by turning a part either black or dark green through oxidation.

So-called cures such as pickling, sandblasting, etc., often aggravated this illness by a tendency to disturb the balance of alloying elements.

General Metal Products Co., St. Louis, purchased an "Iron Lung," informally named because of its resemblance to units used for infantile paralysis patients, from Lindberg Engineering Co., Chicago, to cure their patients—baskets of partially completed, deep-drawn stainless steel stampings of the type 305, 18-8.



STAINLESS WITH SICKLY PALOR

. . . comes clean in muffle furnace

Patients Improved—This furnace is also used to heat treat stainless steels in the 400 series. The unit is a full muffle, gas-fired hydrogen atmosphere furnace with a water-jacketed cooling chamber.

Doctor's reports from this plant showed an immediate improvement in the color of the patients, each stamping emerging from the "Iron Lung" treatment bright and scale free with their original sparkling finish.

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From years of on-the-job experience with practically every type of air line hook-up, the Hansen representative knows what works—and why it does. Frequently, when you run into trouble, he can quickly suggest the remedy to clear up your difficulties.

That's why in dozens of plants, it's almost routine procedure to call him whenever they need help in a hurry—either when actual troubles arise—or when air line circuits are being planned or altered.

The main job of the Hansen representative, of course, is to supply you with exactly the right quick-connective couplings for your particular requirements. But, as so many maintenance men already know, he can also give you real help on such matters as proper take-off, the pitch of your lines, location of drains, and other details designed to give you a trouble-free circuit operating at top efficiency.

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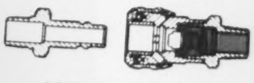
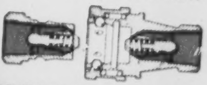


Two-Way Shut-Off



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Aluminum "Self-stops" Corrosion

Outdoor weathering tests show thin protective oxide film is formed after initial penetration. Attack then tends to go laterally along surface

By C. J. WALTON, D. O. SPROWLS,
J. A. NOCK, JR.
Aluminum Research Laboratories
New Kensington, Pa.

ADD wrought and cast aluminum alloys and Alclads to your list of outdoor structural surfaces whether your plant is in an industrial community, at the seashore or in the tropics.

Evidence of the weathering versatility of these products has been gathered over the last 25 years in thousands of field tests conducted by Aluminum Co. of America researchers. Their broad cross section of test exposures ranges from the bituminous-burning environment of their home base at New Kensington, Pa., to the tropical atmosphere of Georgetown, British Guiana.

Their conclusions: 1. After initial exposure of one to two years, corrosion of aluminum alloys is "self-stopped" by the formation of a thin oxide film. 2. Most alloys show little difference in their resistance to corrosion. 3. Corrosion of Alclads is confined to the thin pure aluminum or alloy cladding surface.

Not Hoyle—Aluminum alloy corrosion does not follow the book. Most metals, such as steel, zinc and copper, undergo a relatively uniform, over-all reduction in thickness. Corrosion of aluminum alloys is limited to a few surface points. Some, if not most, of the original surface remains intact even after years of weathering.

Second salient point is that corrosion tends to proceed laterally along a surface after the initial penetration in depth of about 4 mils per year at isolated spots. Subsequent penetration does not exceed 0.11 mil per year under seacoast conditions and may dip as low as 0.03 mil.

In Alclad products, cladding metal is anodic to the core alloy. Attack stops at the core, because of cathodic action; then it proceeds laterally.

Tests — Effects of weathering were determined by changes in tensile strength and finding actual depth of attack. Rate of weathering, judged by changes in tensile strength, decreases with time but not as sharply as depth of attack.

Wrought alloys, usually 0.064 inch thick, were commonly exposed to weather as machined tension specimens, although panels were also used. Casting alloys were tested as round tension bars.

Diameter for sand castings was 0.500 inch, while die-casting diameters were half that figure.

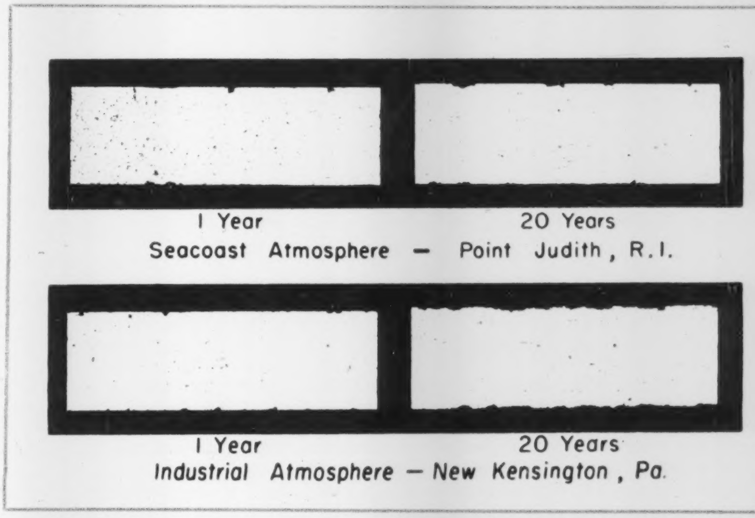
Depth of attack was found metallographically. Several cross sections were polished and examined under 100 magnifications, using a microscope fitted with a Filar micrometer eye piece.

Wrought Alloys—Data were obtained primarily on sheet, but other tests have shown equally favorable results with other forms, such as plate, extruded sections, rolled sections and tubes.

Pure aluminum and its alloys, containing manganese and magnesium alone or in combination, do not show a real difference in weathering between the annealed and strain-hardened temper.

Alloys 2S, 3S and 4S have essentially the same high resistance to corrosion. Increasing amounts of magnesium (within a maximum value yet unresolved) provide a group of alloys with resistance at least as good as the 2,3,4 series. Alloy 52S (2.5% Mg, 0.25% Cr), for instance, had wide usage in marine applications.

Considerable interest has been focused on aluminum alloys with magnesium contents in excess of that in 52S. They have good welding properties and high weld strength. In this group is the alloy A54S (3.5% Mg, 0.25% Cr).


I Year
20 Years
Seacoast Atmosphere — Point Judith, R.I.
I Year
20 Years
Industrial Atmosphere — New Kensington, Pa.

Micrographs of full cross sections of 0.064-inch-thick sheet of alloy 3S. Corrosion starts at few spots, then spreads without gaining much depth

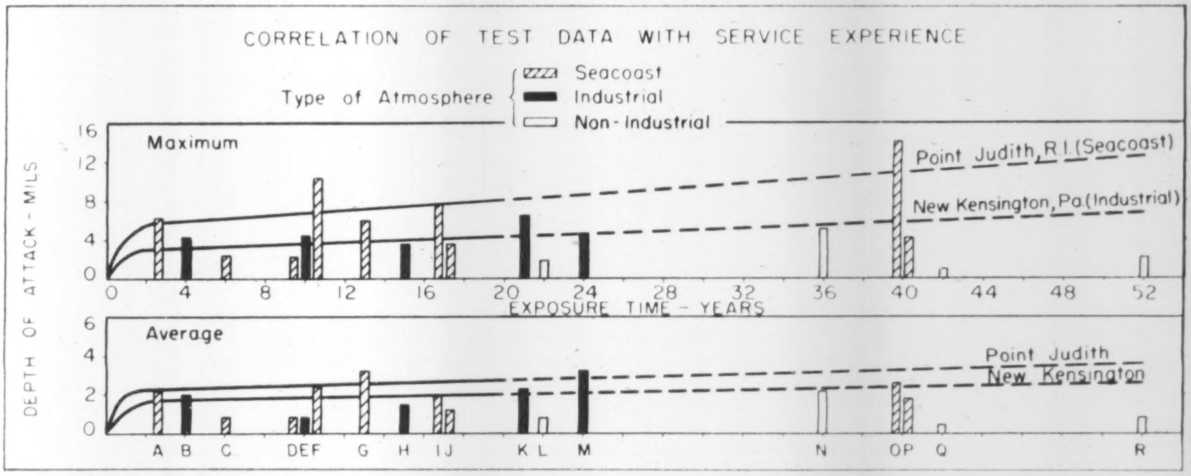
Heat-Treatable Alloys—Compositions here, which include magnesium and silicon and sometimes small amounts of copper or chromium or both, were formulated to get strength, extrudability and formability without lessening corrosion resistance.

Representative alloy is 61S, which has supplemented 53S. Exposure of 16 years indicates its suitability for structural applications, such as power substations, bridge railing and lighting standards.

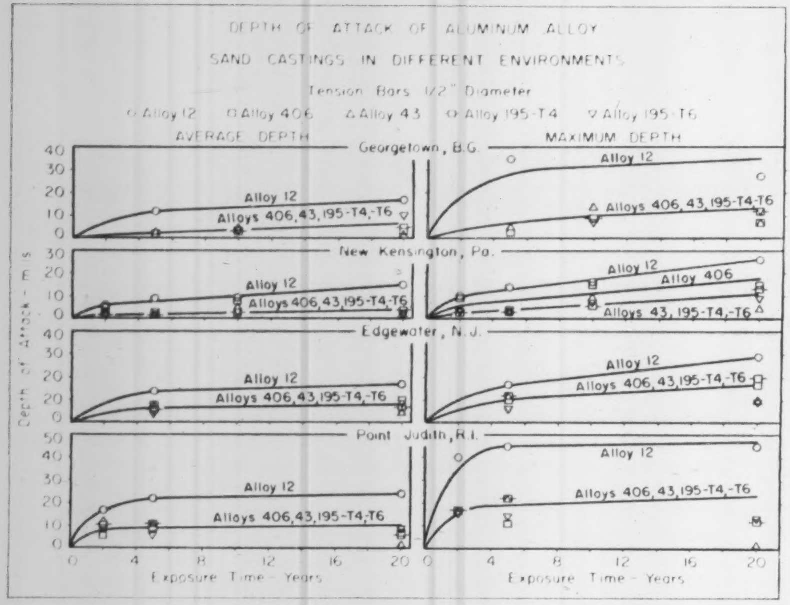
Alloys that do not have the high resistance of the 60 series are 14S, 17S, 24S and 75S. First three contain large amounts of copper and minor additions of other elements. Latter has large amounts of zinc, magnesium and copper.

Alclads — These products evidence top corrosion resistance and maintain structural integrity. Because cladding metals are thin, they do not contribute much to strength; so their corrosion has only negligible effects on strength.

Although non-clad alloys, such as 3S and 4S, have high resistance



Key: A, 2S, 2S, Galveston, Tex.; B, 2S, 3S, St. Louis, Mo.; C, ACSR, Welch's Causeway, Fla.; (next three are all 2S, 3S) D, Key West, Fla.; E, New York City; F, LaJolla, Calif.; G, 3S roofing, Moengo, D. Guiana; H, 4S siding, Cleveland; I, 3S roofing and J, 3S siding, both Panama Canal Zone; K, 4S fence, New Kensington, Pa.; L, ACSR, Pomona, Kans.; M, 3S roofing, New Kensington, Pa.; N, Al cable, Tariffville, Hartford, Conn.; O,P, Al cable, San Francisco bay area; Q, Al cable, Colorado; R, 98.4% Al roof, Rome, Italy. Curves shown are extrapolated to 52 years



to corrosion, there are cases where it is advantageous to use them in their Alclad form. This is particularly so where metal is thin and maximum resistance to perforation is wanted. Examples include gutters, down spouts, flashing and valleys.

Cast Alloys—When substantial amounts of copper are not involved, this group measures up to wrought alloys in weathering service. In general, long-time exposure caused only small losses in the tensile strength of sand-cast and die-cast specimens.

Tests at Point Judith, R. I., show the effect of copper. Alloy 12 (8% Cu), for instance, has less resistance to corrosion than alloy 195 (4.5% Cu).

Aluminum-silicon alloys, noted for excellent casting characteristics, also have rugged corrosion resistance. Alloy 43 (5% Si) and Alloy 13 (12% Si) bear up well as sand or die castings, but addition of copper lowers their resistance.

Others — Aluminum-magnesium-type casting alloys, such as 214, B214, 218 and 220, combine strength and corrosion resistance, but they do not cast as well as aluminum-silicon or aluminum-silicon-copper alloys.

To strengthen aluminum-silicon alloys, small amounts of magnesium are added, without appreciable change in resistance to corrosion. Alloy 360 (9.5% Si, 0.5% Mg), for instance, performs well.

Aluminum-manganese casting alloys, such as 406 (2% Mn) are corrosion resistant but are being superseded by such alloys as 43 and B214, which combine better casting characteristics with comparable corrosion resistance.

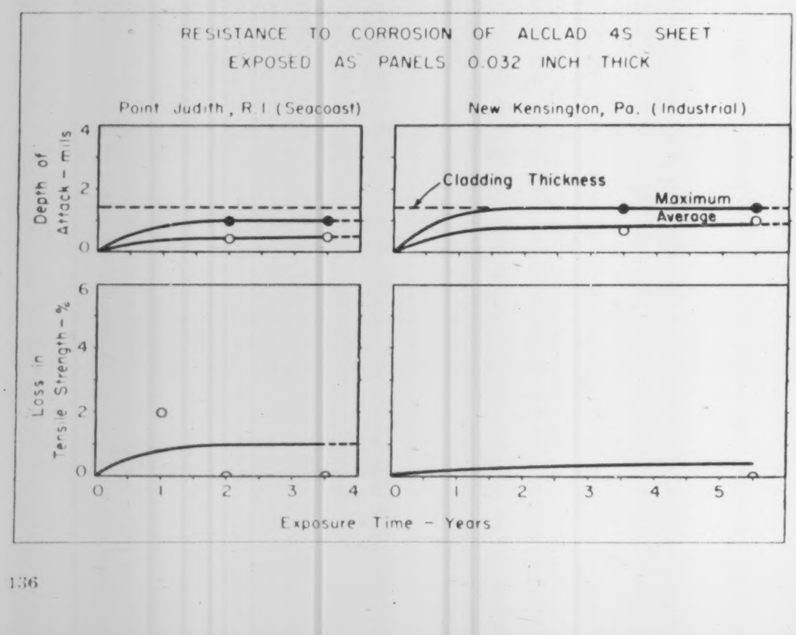
Relativity—In terms of specific applications, Alcoa researchers warn that the particular weathering atmosphere and other factors involved, such as contact with non-metallics and dissimilar metals, must be carefully considered to predict corrosion service.

Geographic location, they point out, often is of less import in determining corrosivity than other factors. Variables include direction of prevailing winds, topography, frequency of precipitation and proximity to bodies of water or industrial plants. In fact, environment may vary as much or more within a given region than it does between widely separated locations.

Non-Metallics — Contact of aluminum alloys with non-metallic building materials does not involve corrosion problems within most buildings under dry conditions. Wood, insulation and masonry, all water absorptive materials, may bring up the corrosion hazard.

Preventatives are: 1. Back painting alloy with good quality paint that is free from lead pigmentation. 2. Painting the non-metallic. 3. Interposing a uniform layer of mastic compound between alloy and non-metallic.

Dissimilar Metals — Aluminum alloys are anodic to most construction metals, such as alloys of iron, copper, nickel, lead and tin. Since zinc and cadmium do not stimulate galvanic attack of aluminum alloys, zinc or cadmium plated steel or other metals are suitable for use here.



Adapted from a paper presented before the annual 1953 meeting of the National Association of Corrosion Engineers in Chicago.

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Detrex PaintBond effectively retards corrosion and serves as an excellent base for paint finishes on metal surfaces. Easily and quickly applied by spray or immersion means, it will add years of life to your product's finish.

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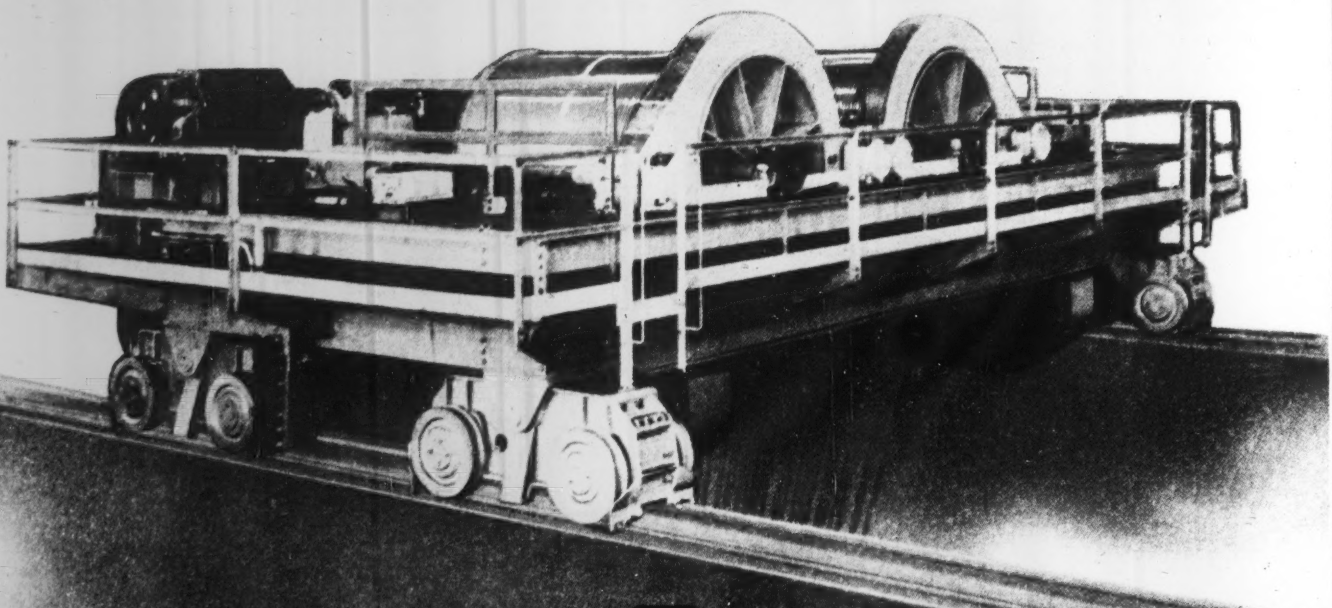

TROLLEY FOR THE WORLD'S BIGGEST CRANE BY *Alliance*

Paul Bunyan used to brag about threading a needle with his enormous hands . . . but he has little on Alliance trolleys. Swiftly, but with the accuracy and control of a micrometer, the world's largest crane moves tons of molten steel with utmost safety.

The trolley is equipped with 16 double-flange track wheels which operate on rails at 30" centers. These wheels are compensated for longitudinal and transverse equalization which assures equal loading of all wheels. The rails being located over the web plates prevent flexing and cracking of top cover plate and reduces the number of diaphragms required.

This ladle crane trolley is equipped with a two-motor, synchronized worm drive, interlocked double-drum type main hoist. The synchronizing shaft employed in this scheme of gearing not only eliminates the undesirable ratchet gears but makes possible an additional safety feature in case one of the hoist motors fail. Under this condition both worms are driven by the remaining motor and all gearing functions as with two motors. In case of failure of one hoist motor on the conventional drive **without** the synchronizing shaft, hoisting is accomplished by **only one set of gears. This imposes a double load on active gearing, the** second **drum being driven through the interlocking drum gears.** The hoist gearing **is so proportioned on all ladle cranes that the** full capacity of the crane **can be lifted by one motor without** exceeding the quarter-hour rating.

The drum gears and pinions of the main hoist of **this new** crane have precision-cut, single-helical teeth, and in cooperation with the worm drive, assure vibrationless operation on either high or low speed hoisting and lowering.

All gears are fully enclosed and operate in a bath of oil, assuring long life and low maintenance.

This trolley is designed for maximum accessibility and ease of maintenance. Anti-friction bearings throughout.

The 4-part safety rope system installed on this crane affords the highest degree of safety in rope reeving.

Contact Alliance today. At your convenience a qualified engineer will discuss your heavy material handling problems. It's to your advantage.

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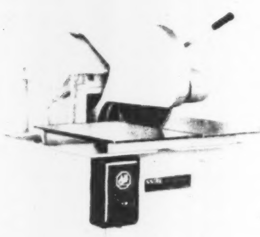
NEW PRODUCTS and equipment

Reply card on page 145 will bring you more information on any new products and equipment in this issue

Heavy-Duty Cutoff Saw

. . . foundry or chop-stroke work

By attaching foundry bed and locking the cutting head, this cutoff saw can be adapted to gate and riser cutting. By reversing this operation, the saw reverts to a chop-stroke for cutting bars and shapes. In addition to this versatility, the unit is powered to permit use of 18 and 20-inch cut-off wheels.



Cutting head is hinged on the motor's end bells to provide work space for extra-large castings. Safety guard covers entire wheel before cut starts when used as a chop-stroke machine. Henry H. Wise Co., Dept. ST, 945 Wilshire Blvd., Los Angeles 17, Calif.

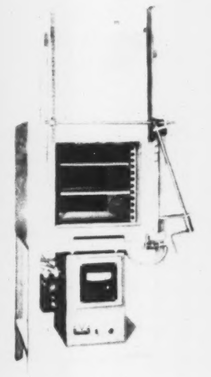
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Air Draw Furnace

. . . automatic recirculating

A door that automatically locks at any position between closed and full open is a feature of this recirculating air draw furnace. As a result, the door can never drop and many operator accidents are avoided. The door has a worm-gear-rack combination that prevents binds at all temperatures.

Guided air flow circulation produces uniform heat treatment of specimen. Rear wall mounted air impeller circulates air in sufficient volume and velocity along both sides of the furnace. A power selector switch regulates power input in proportion to operating temperatures. Blue M Electric Co., Dept. ST, 306-8 W. 69th St., Chicago 21, Ill.

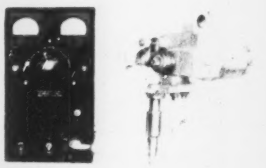


FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Automatic Welding Head

. . . independent motor drive

Control of both welding head and positioner operation is automatic in the model 944 welding head, as well as the high-frequency pilot circuit if one is used. Electromechanical control circuit stops both head and positioner automatically if arc is broken or electrode sticks to the workpiece. Control cuts off high-frequency unit when arc is established.



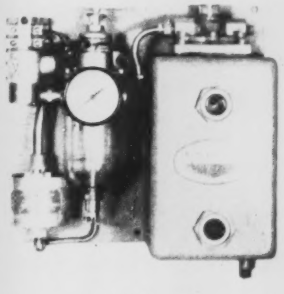
Motor drive is electrically independent of the positioner and welder power supply. Hardened steel feed rolls are adjustable for both solid and tube wire and accommodate rod size from 1/8 to 1/4-inch diameter. Mir-O-Col Alloy Co., Dept. ST, 312 North Ave. 21, Los Angeles 31, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Automatic Oiling System

. . . applies constant film

Fully automatic oiling system for bearings, vees, slides, ways, rollers, cams, chains, gears and transmissions applies constant and uniform film. Oil-Air setup has no moving parts, operating solely on compressed air to atomize oil into microscopic particles that are carried in the air stream and distributed through tubing.



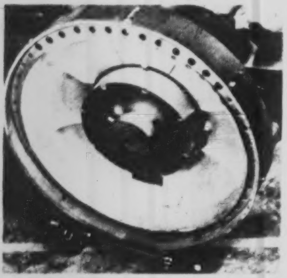
Amount of oil flow is adjustable. Mixture of oil and air is thrust against a reclassifier which reduces it to minute drops. J. N. Fauver Co. Inc., Dept. ST, 51 W. Hancock, Detroit 1, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Dust Pick-Up Attachment

. . . installed in 10 minutes

Dust pick-up vacuum cleaning attachment for use on the manufacturer's floor machines, while doing light or finish sanding, can be put on or removed in 10 minutes. Detachable vacuum power unit with 1-hp motor mounts on the floor machine handle; suction ring assembly clamps to the machine's base without drilling.



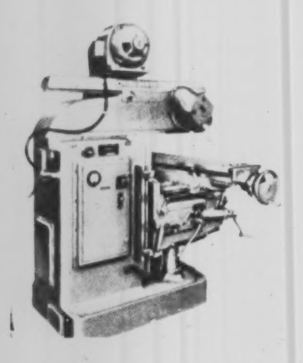
Both vacuum and machine operate together from single switch lever, but floor machine can be operated independently if necessary. Multi-Clean Products Inc., Dept. ST, 2277 Ford Parkway, St. Paul 1, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Ram-Type Milling Machines

. . . feature adjustable cutterhead

Ram-type milling machine, featuring adjustable cutterhead, permits conventional horizontal, vertical and angular milling with one machine. Cutterheads are designed for ease of positioning to desired cutting position.



Load meter, mounted on electrical control panel of each of four miller units, shows quickly per cent of cutting load. It enables the operator to obtain full capacity from the millers, prevents overloading and shows when cutter becomes dull. Van Norman Co., Dept. ST, Springfield, Mass.

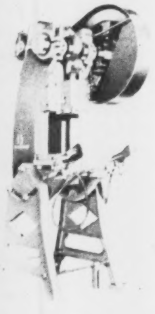
FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Redesigned Punch Press

. . . continuous or single stroke

Continuous or single-stroke operation is available on this redesigned 15-ton open-back inclinable punch press. Press was redesigned to meet safety codes throughout the country. A metal guard completely covers the flywheel.

Standard stroke is 2 inches, with strokes available on special order up to 4 inches. The model's shut die height is 9 inches. Press is made in plain open belt with 125 strokes per minute, and back-geared at 70 strokes per minute. Diamond Machine Tool Co., Dept. ST, 3429 E. Olympic Blvd., Los Angeles 23, Calif.

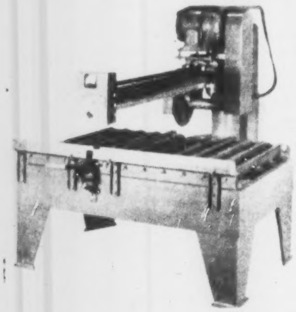


FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Friction Grating Saw

. . . plain or roller-type tables

A saw designed especially for work on grating, expanded metal and similar materials is furnished with plain or roller-type table, or without table for mounting over conveyor. With roller table it has 58-inch maximum center-to-center movement with 18-inch blade guard and will cut 48-inch grating.



The model has stepless electronic feed of 0 to 11 fpm with automatic high speed return and stop. Table is 5 feet long and takes widths to 52 inches. Ty-Sa-Man Machine Co., Dept. ST, Knoxville, Tenn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Screwdrivers, Nutsetters

. . . air operated, reversible

A series of 24 lightweight air-operated, reversible screwdrivers and nutsetters has reversible motors to permit threaded fastener removal or application. Complete range of application includes speeding inspection, testing, service and repair of all assembled products.

Reversibles are available in four basic speeds of 475 to 2000 rpm. Each is offered with slip clutch for exact tension control or positive clutch or manual control. Further option of lever throttle or pistol type is offered for all types. Weight of each unit is 2 pounds. Thor Power Tool Co., Dept. ST, Aurora, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

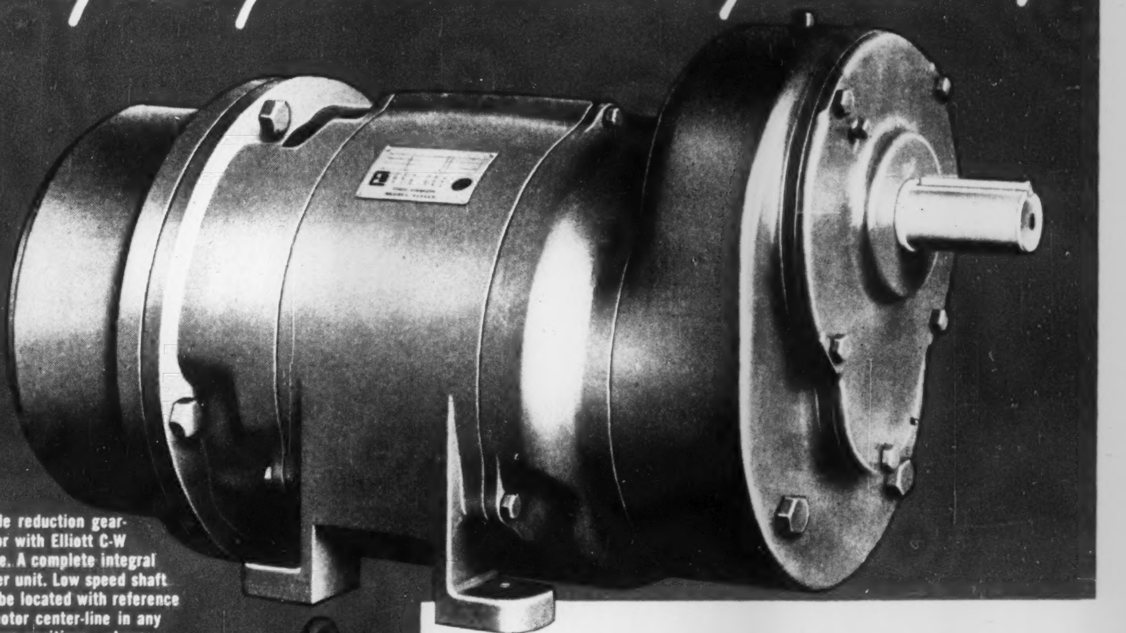
Powder Lance

. . . joins powder, oxygen types

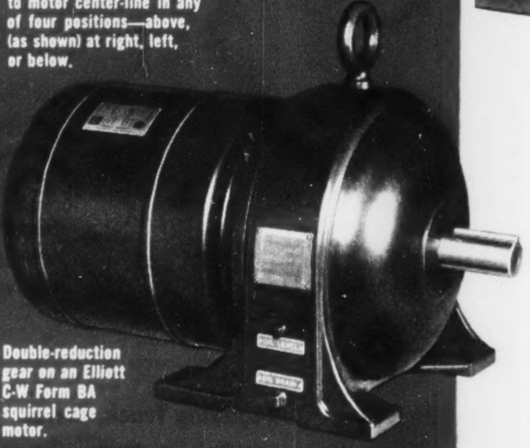
This powder lancing unit is designed to combine the advantages of powder cutting process with ease and efficiency of oxygen lance operations. Introduction of metallic powder into the oxygen stream produces an exothermic reaction hot enough to pierce holes in many materials that resist a standard oxygen lance.

Oxweld ACL-1 lance automatically mixes oxygen and powder in correct proportions to insure effective use of the process. Any standard lance pipe, in single or multiple lengths, can be used. Positive-pressure powder control gains excellent piercing results with multiple lengths up to 63 feet. One

The speed you want...where you want it!



Single reduction gearmotor with Elliott C-W brake. A complete integral power unit. Low speed shaft can be located with reference to motor center-line in any of four positions—above, (as shown) at right, left, or below.



Double-reduction gear on an Elliott C-W Form BA squirrel cage motor.

Triple-reduction unit mounted on an Elliott C-W totally-enclosed fan-cooled "Sealedpower" explosion-proof motor.

W3-10

ELLIOTT
CROCKER-WHEELER
Gearmotors

Here is a complete line of motors with built-in reduction gear units which covers practically every need. Available in any motor type, any enclosure, any mounting, in frame sizes from 1 to 150 hp.

Single reduction, 780 to 280 rpm . . . double reduction, 230 to 45 rpm . . . triple reduction, 37 to 7.5 rpm.

Construction features include precision processed, file-hard gears, large oil reservoir for abundant splash lubrication, heavy, rigid cast iron pyramidal base, and a bearing housing and oil seal *separating* the inner high speed motor bearing from the gear lubrication, which after much service may contain minute metallic particles tending to shorten bearing life.

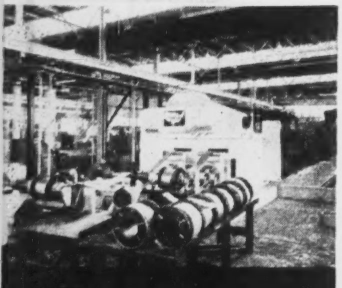
GET THE GEARMOTOR DATA BOOK
— ask your local Elliott District Office or write direct to Elliott Company, Crocker-Wheeler Division, Ampere, N. J.

ELLIOTT Company
CROCKER-WHEELER DIVISION

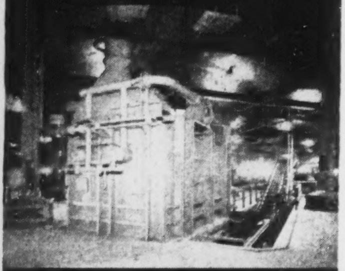
The over-all job in

Production Lines and Special Automatic Machines by CONTINENTAL

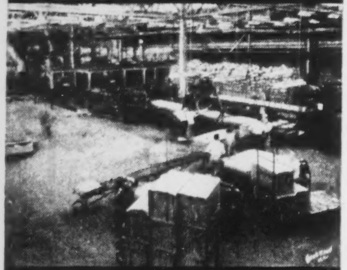
for military production...



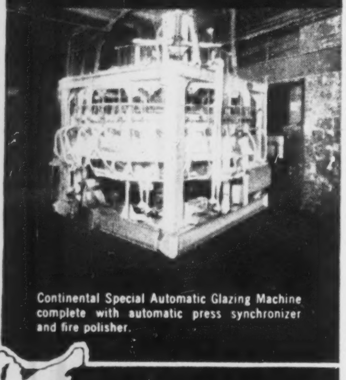
Continental Automatic Strip Production Line consisting of annealer, pickling machine, dryer, and coiler.



Continental Special Automatic Pig Molding Machine complete with automatic charging, melting, and pouring.



Continental Automatic Production Line operating from raw materials to completely finished and packed product. This production line consists of fifteen integrated, synchronized, special automatic machines.



Continental Special Automatic Glazing Machine complete with automatic press synchronizer and fire polisher.

For maximum production of military items manual operations must be eliminated. With CONTINENTAL Special Automatic Machines and Integrated Production Lines production goes on in a continuous flow with better, more uniform products with a minimum of man hours.

CONTINENTAL jobs begin with analysis of the requirements, then the selection and development of proper methods for greatest results. Finally follows the design, the building, and the installation of the machines—delivering a COMPLETE UNITIZED PRODUCING PACKAGE with results guaranteed.

The broad experience of CONTINENTAL offers you a prompt, sure solution to your change-over program.

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CONTINENTAL
SPECIAL MACHINES
COMPLETE PLANTS

MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

simple lever controls both oxygen and powder. Linde Air Products Co., division of Union Carbide & Carbon Corp., Dept. ST, 30 E. 42nd St., New York 17, N. Y.

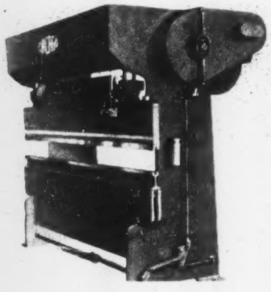
FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Light-Duty Press Brake

. . . 20 to 50 strokes per minute

Series A light-duty press brake has drive infinitely variable between 20 and 50 strokes per minute. A twin-plate bed provides extreme lateral rigidity minimum deflection and a $1\frac{1}{4}$-inch slug clearance on multiple punching.

Even application of power over



length of ram is obtained by a twin drive through double back gear. Friction clutch and band brake permit jogging and slipping to meet operating conditions. Ram adjustments can be split so one end is raised or lowered to tilt the ram for tapered work. Dreis & Krump Mfg. Co., Dept. ST, 7400 S. Loomis Blvd., Chicago 36, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Side-Loading Truck, Carrier

. . . moves flat or coiled stock

This 30,000-pound capacity combination side-loading fork truck and load carrier is built for flat or

coiled steel stock handling in mills and warehouses. The traveloader truck is a self-loading unit which picks up loads from the side, hauls

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● **REFERENCE DATA:** Write for new Bulletin 14 1, "Automatic Instrumentation to Accelerate Research."

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Polished Blue Sheets and Coils

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FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. — Rochester, N.Y. — Fairfield, Conn.

them lengthwise within the width of the unit and stacks them parallel to aisles.

According to the manufacturer, it requires less aisle-width to operate than conventional trucks of similar capacity. Because loads are carried inboard, it provides high stability factor that allows safe operation up to 30 mph. When it stacks or unstacks, the truck gains stability through use of hydraulic stabilizing jacks, controlled from driver's seat. Baker Industrial Truck Division, Baker-Raulang Co., Dept. ST, 1230 W. 80th St., Cleveland 2, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Jelly-Type Hand Cleaner

. . . simply rub in, rinse off

Jelly-type hand cleaner dissolves and removes grease, paint, tar, etc., from workmen's hands, by a simple rubbing over the skin for several seconds. The cleaner can be wiped or rinsed off the hands, leaving skin soft.

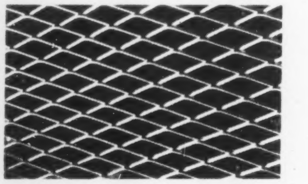
Material possesses no odor, nor is an odor detected on hands after using. Dacar Chemical Products Co., McCartney at Wabash St., Pittsburgh 20, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Expanded Aluminum Mesh

. . . lightweight, nonresonant

Expamet expanded aluminum will not rust and can be dyed and anodized in a wide range of colors. It will not peel, chip or flake, withstanding corrosive attack by



USE A

REPLY CARD

Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

68. Rotary Test Unit

Warren Brother Roads Co., Warren Brothers Mfg. Div.—A vacuum high speed testing unit for rotating parts at speeds up to and above 100,000 rpm is subject of 4-page illustrated bulletin. Typical applications include testing of rotors, turbine blades, fan impellers and gyros. Three units are described, with all specs.

69. Maintenance Painting

Wilbur & Williams Co.—4-page folder gives a quick reference on various painting maintenance problems and their solution. Painting for rust control, for protecting concrete walls and floors, and for protection from chemicals and corrosion and painting without odor are among the topics discussed.

70. Industrial Washers

Detrex Corp.—Complete line of industrial washers is described in 8-page booklet profusely illustrated with photos of equipment ranging from single-stage, totally enclosed cabinet washers to huge, five-stage phosphate coating and paint bonding machines. Operating hints to plants using alkali or emulsion washers are supplemented.

71. Buffing & Polishing

Schaffner Mfg. Co.—Liquid buffing compounds, compositions for automatic buffing machines, bar buffing compounds and coloring rouges and a selection of bias buffs and polishing wheels are listed and described in 20-page catalog 54. An available calculator for selecting the right buff or polish is described also.

72. Wire Rope Handbook

A. Leschen & Sons Rope Co.—In 64 illustrated pages, "Wire Rope Handbook" contains descriptions, diagrams and illustrations of rope types and constructions, as well as helpful information about lubricants, working loads, safety factors and specifications. Charts give breaking strengths and calculations for proper attachment selection. A line of wire rope is also described.

73. Steel Strapping Equipment

Allegheny Steel Band Co.—Describing steel strapping, tools and accessories, including tensioners, sealers and carrying cradles, illustrated bulletin also provides engineering data on strapping strengths and seal methods.

74. Drawing & Forming Lubricant

Gilron Products Co.—Drawcote, a dry lubricant for use in drawing, forming and extruding operations, is the subject of 8-page illustrated bulletin. Compound is applied before metal is worked, dries for easy handling and full protection, and can be easily washed off after metalworking is completed. Bulletin also details various applicating machines.

75. Special-Purpose Metals

Metals & Controls Corp., General Plate Div.—12-page well-illustrated catalog describes various composite, precious and Truflex metals, also electrical contacts. Thin gage and mirror finish rolling processes are covered, and data on the platinum-group and manganese age-hardening metals and alloys given.

76. Permanent Magnets

International Nickel Co.: "Nickel Containing Alloys for Permanent Magnets" is title of 16-page pamphlet which discusses the technical aspects and magnetic properties of these alloys. Some applications of permanent magnets are covered as well.

77. Friction Clutches

Link-Belt Co.—Schematic drawings and dimensional tables that enable the engineer to select the right clutch or clutch coupling for each requirement are included in folder 2437 on Beyl friction clutches and couplings. Clutches are available in 10 standard sizes from 2¾ to 125 hp at 100 rpm.

9-7-53

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78. Steel Tubing

Globe Steel Tubes Co.—In 12 illustrated pages, bulletin 103-Z gives a useful guide on selection and use of seamless, mechanical and pressure welded steel and stainless steel tubes and on stainless and carbon steel welding fittings. Properties, available selection and applications are described.

79. Manufacturing Cost Control

Harold F. Howard Co.—"Manufacturing Cost Control" is title of a 4-page folder No. 117-48 detailing a five-step method of setting up an effective system. Typical examples of poor practices described in detail include materials handling, overtime charges, idle time, and small tool losses.

80. Self Locking Nuts

Grip Nut Co.—Lock nuts, high lock nuts, countersunk and pilot weld nuts, and semi-finished nuts in steel or brass are among the locknut types featured in 8-page illustrated bulletin "Gripco Products". Included is the clinch nut for blind assemblies or for furnishing additional threaded depth when working with thin metals.

81. Fluid Power Circuits

Logansport Machine Co.—32-page pocket-size manual "The Circuit Rider" presents down-to-earth discussion with drawings of basic designs in fluid power circuits. It points out wide range of operations made possible through application of different types of such circuits.

82. Electric Furnace

Hevi Duty Electric Co.—For temperatures up to 2600° F., Speed-Treet electric furnace is described on illustrated data sheet IND-1147-EE. Gas-tight construction permits use of controlled atmosphere. A toolroom combination for atmosphere generation, preheat, high temperature and tempering is also described.

83. Blast Furnace Insulation

Illinois Clay Products Co.—Recommendations for insulating blast furnace stoves with Therm-O-Flake block, brick and packing are contained in 4-page data folder. Thermal characteristics are shown by full-page diagrams, and are also listed in tabular form. Standard material is for insulation up to 1900° F.

84. Pipeline Strainers

S. P. Kinney Engineers, Inc.—12-page illustrated catalog on self-cleaning pipeline strainers gives details of both automatic and manually operated types for service with a variety of liquids including water and petroleum products in pipe sizes from 2 to 36 in. Complete specifications are given.

85. Diesel Engine

Ingersoll-Rand Co.—Sectional wash drawings, installation views and diagrams in 12-page booklet 10027 reveal why the TS diesel, a relatively small and lightweight engine, is in the heavy-duty class. It is a 7 x 8½-in., 900 to 1000-rpm diesel rated 200 to 400 hp.

86. Automatic Pouring Unit

Ajax Engineering Corp.—Characteristics and operation of the Ajax-omatic combination induction holding furnace and pouring unit for use in the casting of aluminum and zinc alloys are described in 4-page folder.

EDITORIAL ARTICLES

Available in Limited Quantities

87. Clean Bulk Handling

"Bulk Materials Handling: It Can Be Done Cleanly" is STEEL article which reports how Harbison-Walker produce silica brick with hardly enough dust to sneeze at. Automatic combining of crushed silica and binders is the big answer.

88. Bigger Electric Furnaces

Dr. Allen G. Gray, Technical Editor, reveals the growing use of the electric furnace in producing carbon steel in STEEL article "Open Hearth Challenged as More Carbon Steel Goes Electric". The article also describes the 200-ton top charge Heroult furnace built for McLouth Steel Corp. which is the largest in the world.

89. Finishing Stainless Steel

Some pictorial tips on polishing and buffing stainless steel for mirror-like finishes are presented in STEEL article "Surface Finishing Stainless Steel". [illegible] recommendations for grinding and polishing are given as well.

90. More Annealing Heat

"[illegible] Possible Ends Annealing Troubles" is STEEL article by W. K. Lombard of Thermal Research & Engineering Corp. which shows how high-velocity burner design steps up circulation in furnace without mechanical means. It also develops more heat release per unit of combustion.

most acids. Nonresonant character and light weight indicate a variety of industrial and decorative applications.

Material is characterized by diamond-shaped and other special meshes of excellent regularity and finish. British Industries Corp., Dept. ST, 164 Duane St., New York 13, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Small-Volume Copier

. . . up to 200 copies per hour

This small copying machine is reported to bring speed and savings of direct copies within easy reach of every office. Only slightly larger than the ordinary electric typewriter, the unit has all features of the manufacturer's regular models designed for firms that require more printmaking capacity.

Machine copies letters, accounting statements and reports, purchase orders, etc.—anything that is written, typed, printed or drawn on a sheet of translucent paper up to 9 inches wide, any length. A first copy is ready in seconds; up to 200 copies can be completed in an hour. Ozalid, division of General Aniline & Film Corp., Dept. ST, Johnson City, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Nylon-Coated Rope

. . . 250,000-psi steel core

High-strength steel core of 250,000-psi tensile strength enclosed in a jacket of transparent nylon is a rope combination that provides

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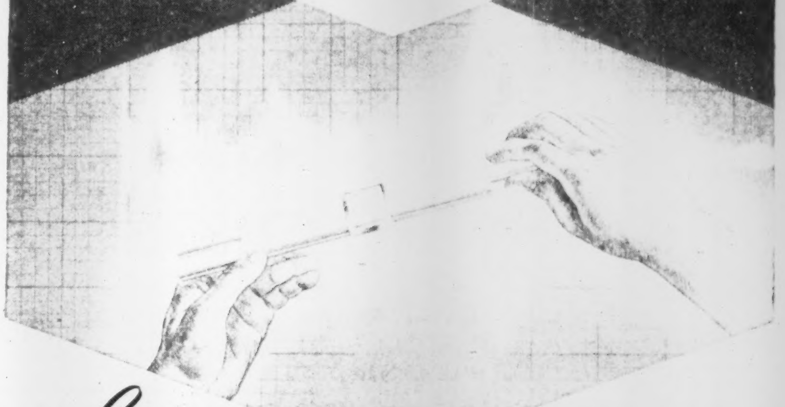
TESTING or QUALITY CONTROL PROBLEMS?



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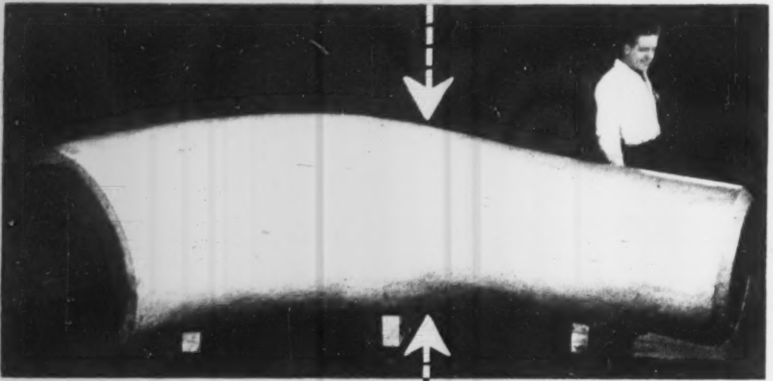

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This Casting Set a Record!

Casting weight
21,000 pounds

Shipping weight
14,000 pounds

Alloying Elements
38% Ni., 18% Cr., 2% Mo.

It's the weight rather than the Ni-Cr content that's the record.

We've cast many a piece with such a high Ni-Cr combination. But this represents the largest casting we have ever made. And it took careful scheduling of our entire battery of electric furnaces, with a double melt from two smaller furnaces.

Next followed a thorough X-ray for hidden flaws with our 400,000 volt unit. Then rough-finishing to specifications.

The significant fact is that this casting, the first of this size we have ever produced and destined for a most important high priority processing job, passed inspection with flying colors. *There was no reject here.* It is indicative of the skill of our metallurgists and foundrymen in turning out high alloy castings.

If you are looking for this kind of service, make Duraloy your casting source.

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strength and durability. Nylon jacket protects the core from corrosion and increases fatigue resistance up to five times.

Surface is smooth and cannot damage other materials it contacts. High electrical resistance of nylon prevents sparking and grounding where this hazard exists. Rochester Ropes Inc., Dept. ST, Culpeper, Va.

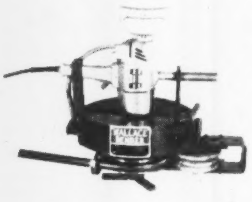
FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Portable Bending Machine

. . . averages 60 bends per hour

Model 60 bending machine can be carried by hand and bends from $\frac{1}{2}$ to $1\frac{1}{4}$-inch pipe to 180 degrees. One operator can average 60 bends per hour, while the manufacturer reports die forms are changed quickly and easily for pipe sizes.

Limit switches are preset at the factory for 0 and 180-degree rotation of bending form to prevent possibility of overtravel in forward or reverse direction. The unit is built so it can be placed anywhere along a length of pipe, then operated at that location. Wallace Supplies Mfg. Co., Dept. ST, 1300 Diversey Parkway, Chicago 14, Ill.

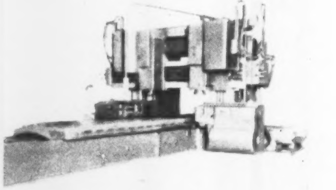


FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Planer-Typ Millers

. . . have 27-inch faces

Straight-line housings having 27-inch faces, as opposed to $15\frac{3}{4}$ inches on previous model, are featured in this planer-type miller. Dog leg outer wall is now full depth



Norman Rockwell

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Sure!"

THAT, in a nutshell, tells you why so many wire rope users in the industrial fields prefer Roebling wire rope . . . it speeds up operations . . . lasts longer on the job . . . saves money that really adds up.

For the last word in wire rope efficiency and economy, call your nearest Roebling office or distributor for a Roebling recommendation.

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A subsidiary of The Colorado
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To turn out top quality production, take in top quality wheels . . . Simonds Grinding Wheels. They're second to none in quality, economy, dependability . . . and in the variety and completeness of the line they comprise. It includes grinding wheels, mounted wheels and points, segments and abrasive grain . . . everything you need for roughing, finishing, cutting off, sharpening, polishing. No matter what *your* jobs call for, call on your Simonds distributor for prompt service that gives you superior grinding wheel performance.

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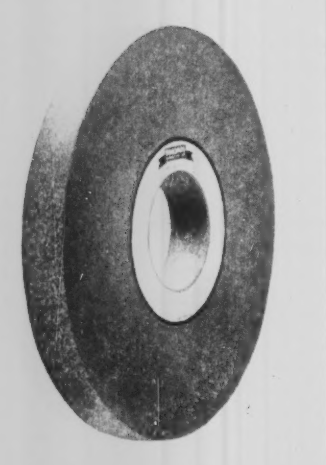
Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N.Y. Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.



of straight line wall. These two characteristics mean considerably increased strength and rigidity of side head and rail support.

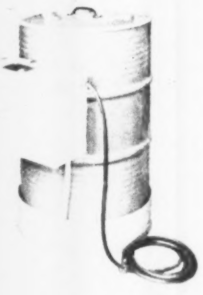
Other design improvements: All gibs, plates and bearings are faced with laminated plastic plates. There are no metal-to-metal bearings. Double opposed taper gibs permit quick adjustment of spindle tram. Oversize square locks on housings and cross rail will absorb increased feed pressures when cutting in forward or reverse directions. G. A. Gray Co., Dept. ST, Cincinnati, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Unitized Vapor Degreaser

. . . moves wherever needed

Unitized method of vapor degreasing does a thorough job in less than a minute. The Baronet degreaser is reported to require smaller operating space than most industrial degreasers and can be moved easily from job to job within an operating section or shop.



Air-cooled condensers eliminate water connections, allowing use of the units wherever electric power is available. The units require only 5 gallons of cleaning solvent for effective operation. Baron Industries, Dept. ST, 241 West Avenue 26, Los Angeles 31, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Coolant Supply Unit

. . . requires no separate motor

This coolant supply unit can be installed in 30 minutes or less into the hollow column of most bench drill press models. No separate motor is required. Driven by the drill press motor, it eliminates danger of electrical shock.

Operating with a half-gallon of

Wherever Extreme Cold REIGNS

If you plan on making components for meters, radios, timing mechanisms, signal systems, or for any other assemblies that must not fail in subzero surroundings, by all means make them of Seymour Phosphor Bronze.

Placed in stratosphere or polar regions, springs, clips, contacts, etc. made of this remarkable alloy of copper, tin, and phosphorus show no noticeable change in tensile strength or impact strength, and the modulus of elasticity actually increases. Seymour Phosphor Bronze also has high resistance to most corrosive environments and alternating stress; the effect upon it of fresh and salt water is practically nil. Glad to send you test samples and further data.

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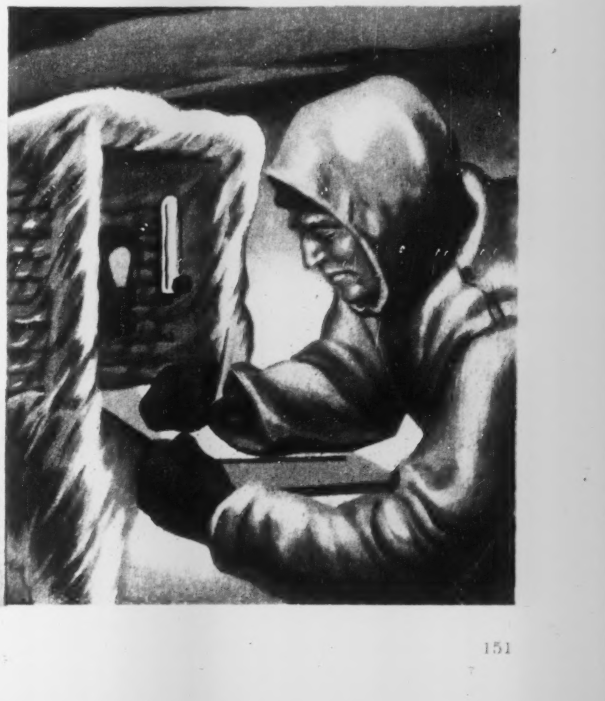


ENGINEERED DUST CONTROL... KEY TO EFFICIENCY AND HEALTH

Asbestosis—a deadly lung disease caused by inhaling dusts created by asbestos mining and manufacturing processes—has been a long-time menace to the health and efficiency of workers in the asbestos industry.

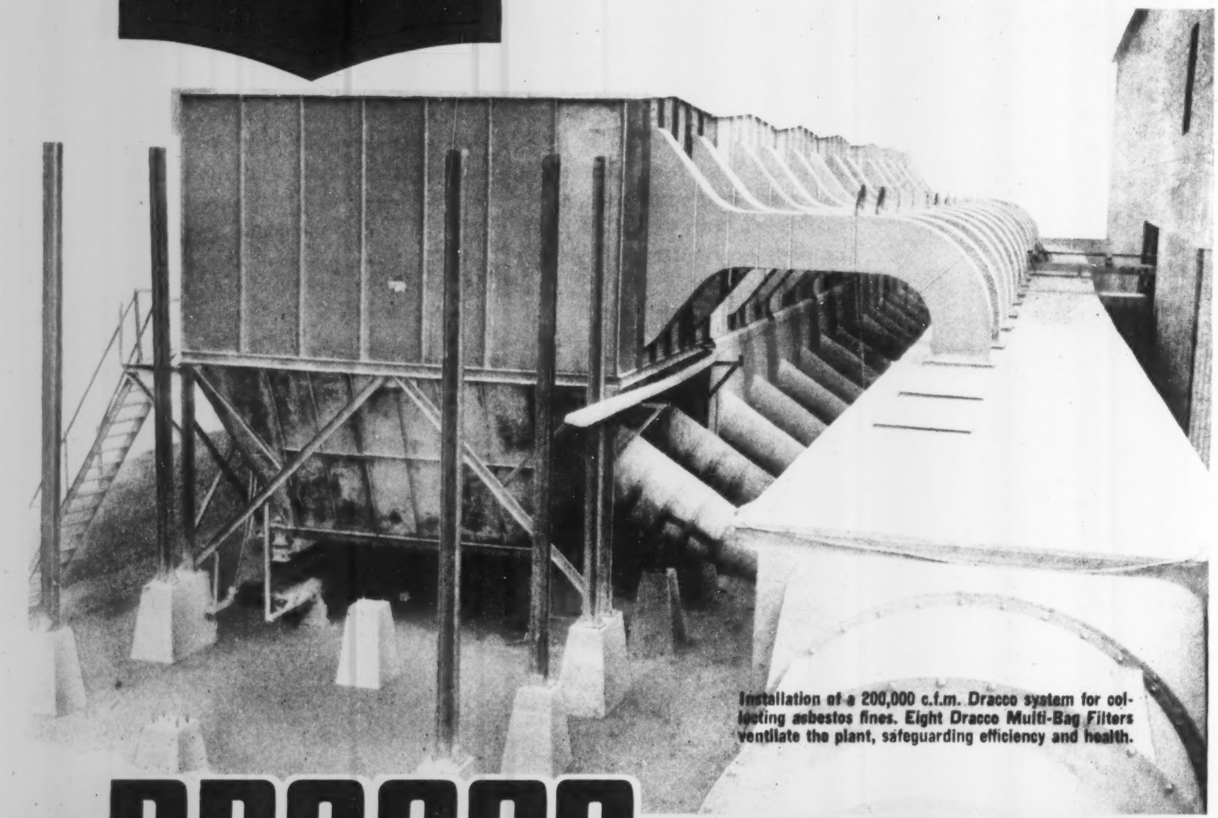
Following an exhaustive search for efficient methods of eliminating these insidious particles, one of the world's largest producers of asbestos had Dracco-engineered Dust Control Systems installed in their three plants.

Now 50 to 100 pounds of these lethal asbestos dusts are withdrawn every minute from the plant atmosphere by integrated Dracco Filters providing constant and uniform peak-efficiency dust control.

By relying on Dracco to overcome the asbestosis hazard to employees, the firm has protected their health and reduced absenteeism. Greater productivity resulting from improved manpower efficiency has contributed to increased profits.

Whether your problem is controlling *harmful* dusts or collecting *valuable* dusts, call Dracco for the "profit-engineered" solution which meets your process requirements.

DRACCO CORPORATION
4090 East 116th Street · Cleveland 5, Ohio



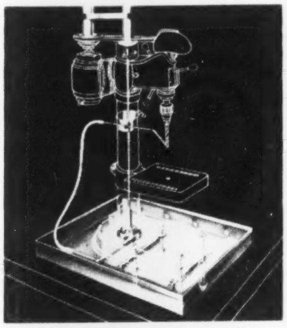
Installation of a 200,000 c.f.m. Dracco system for collecting asbestos fines. Eight Dracco Multi-Bag Filters ventilate the plant, safeguarding efficiency and health.

DRACCO

Performance Proved

Airstream CONVEYORS · DUST CONTROL EQUIPMENT

coolant of any type, the pump carries liquid through tubing beneath the drill press. Pan has clips on the sides to hold splash shields when additional height is desired.



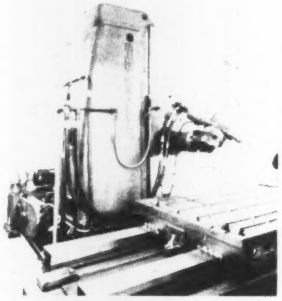
Pump intake is screened to keep out drillings that might clog the flow line. Fittings to adapt the device to popular press models are supplied in a complete kit. Wade & Sons, Dept. ST, 982 E. Truman Rd., Independence, Mo.

FOR MORE DATA—CIRCLE REPLY CARD NO 20

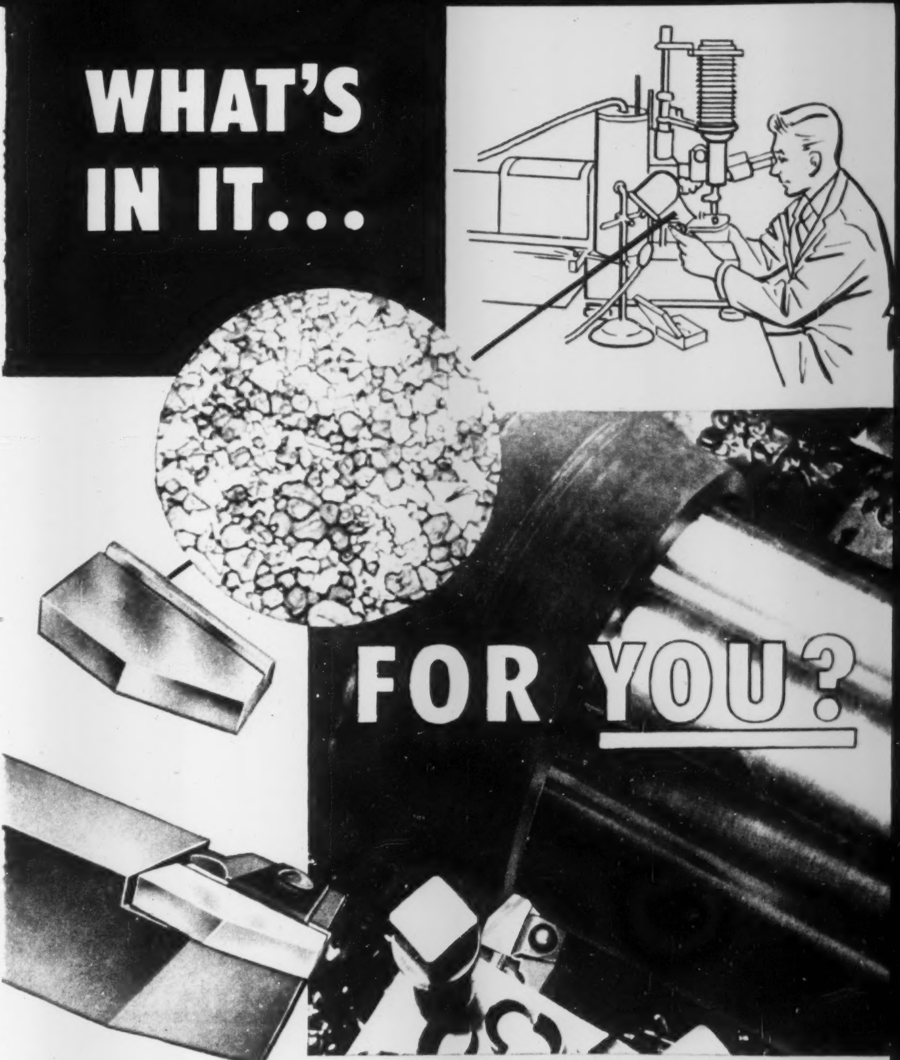
High-Speed Milling Attachment

. . machines aluminum forgings

This high-speed milling attachment is designed to machine aluminum alloy forgings for airplane wing hinge sections. Developed for use on the manufacturer's table-type horizontal boring, drilling and milling machine, it is well adapted for machining the many angles necessary on wing hinges.



Independently driven, the attachment has no connection with the machine spindle and therefore does not depend on high inertia driving elements in the machine headstock. The latter acts only as a carrier for moving the attachment up and down. The unit is designed for 360 degrees of horizontal and vertical



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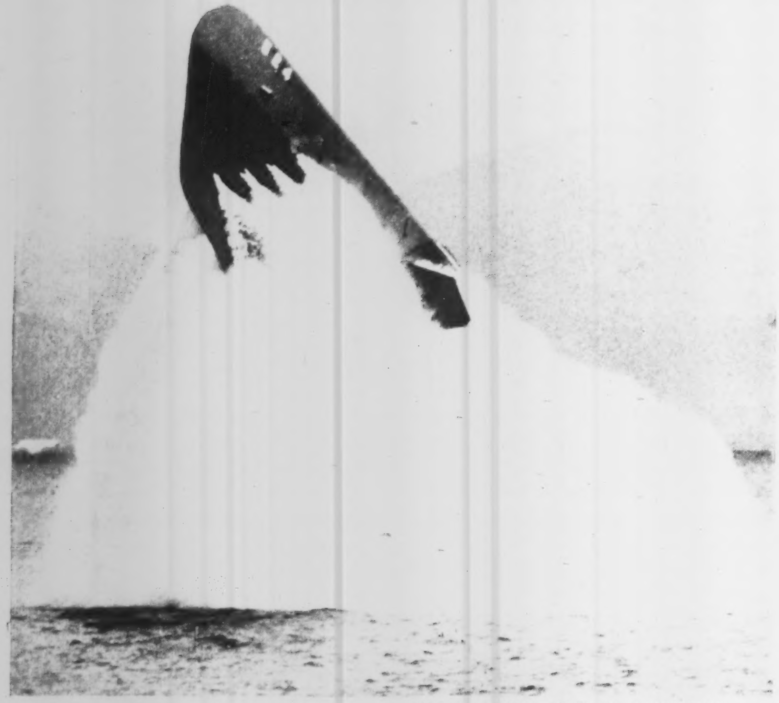

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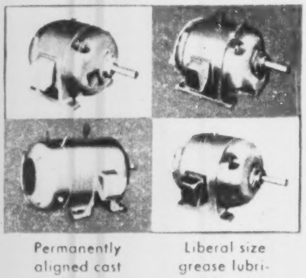
UP FROM THE SEA comes fabulous Motor Stamina for Industry!

Over half a century of service aboard U.S. Navy submarines — *where dependability means life itself* — has bred tremendous stamina into ELECTRO DYNAMIC industrial motors. This inheritance of *extra dependability*, proved during years of gruelling duty under the sea, explains the amazing performance records being established by E.D. motors in industry today.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Permanently aligned cast iron brackets.
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(N. E. M. A. STANDARDS)

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ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

swivel, has 3 to 1 speed range and spindle speed range from 800 to 2400 rpm. Giddings & Lewis Machine Tool Co., Dept. ST, Fond du Lac, Wis.

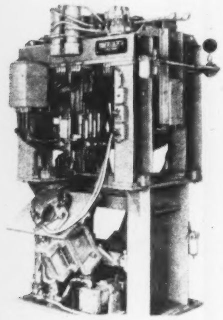
FOR MORE DATA—CIRCLE REPLY CARD NO 21

Electric Resistance Welder

. . . multiple gun applications

Resistance welder, the SX 36 G, is a standard multiple-gun base machine with fabricated steel superstructure for arrangement of welding guns and transformers. Base unit is a universal multiple type with two individually-operating platen units.

Vertical retraction feature of platen from welding position means a wide variety of deep-drawn piece parts can be welded. Two platen units can be operated individually in production or can operate simultaneously through lifting and retracting sequences. This permits long parts to be passed through the middle of the machine to accomplish large weld patterns in one operation. Sciaky Bros. Inc., Dept. ST, 4915 W. 67th St., Chicago 38, Ill.

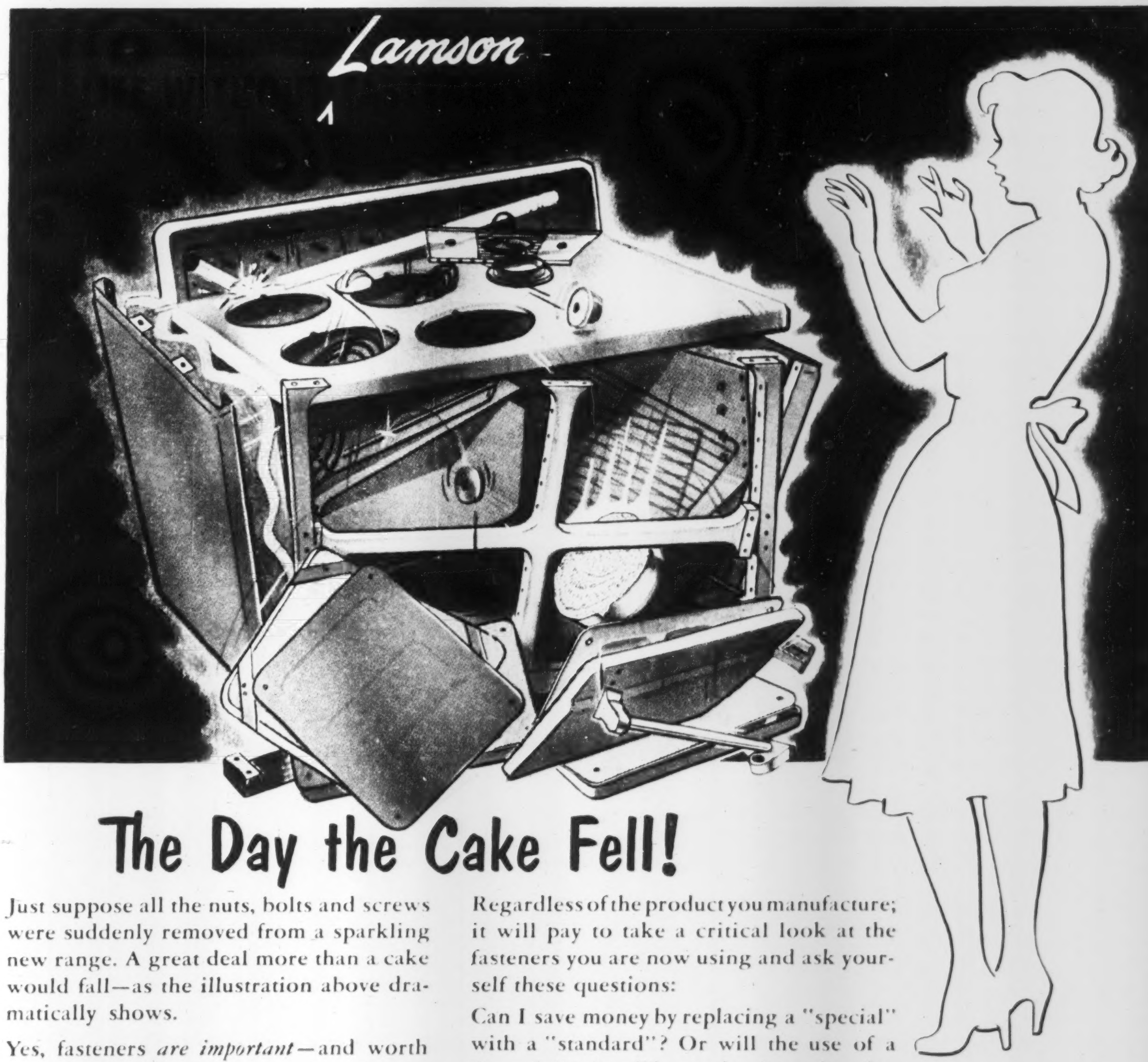


FOR MORE DATA—CIRCLE REPLY CARD NO 22

Cylindrical Parts Gage

. . has revolving guide rails

Accurate, rapid cylindrical parts inspection is gained by this air ring gage, with amplifications of 1000, 2000, 5000 and 10,000 to 1. A feature that makes it virtually wearproof includes two cylindrical steel guide rails on each side of the air ring that can be revolved when sliding surfaces are worn. Thus, instead of scrapping the gage or reworking the guide rails, the operator turns the rails slightly and



The Day the Cake Fell!

Just suppose all the nuts, bolts and screws were suddenly removed from a sparkling new range. A great deal more than a cake would fall—as the illustration above dramatically shows.

Yes, fasteners *are important*—and worth all the time and care you take in selecting those that are "just right" for your product. Lamson & Sessions is currently supplying most of the appliance manufacturers with bolts, nuts and screws—each type engineered to meet individual requirements.

Regardless of the product you manufacture; it will pay to take a critical look at the fasteners you are now using and ask yourself these questions:

Can I save money by replacing a "special" with a "standard"? Or will the use of a "special" simplify production, thereby, saving time and perhaps materials?

Remember, whatever your problem, to check with Lamson & Sessions—one of the few manufacturers offering a *complete line* of fasteners teamed with expert engineering service.

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CAP SCREWS "1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS Semi-finished, hot pressed, cold punched.

LOCK NUTS Economical, vibration proof. Can be used repeatedly.

COTTER PINS Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS Cup point type, hardened and heat-treated.

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has new locating surfaces of proper size.

Air ring has three open air jets spaced equally 120 degrees apart.

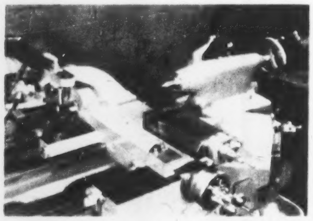
At 10,000 to 1 amplification, a variation in diameter of 0.0003-inch causes float to move 3 inches. Sheffield Corp., Dept. ST, Dayton 1, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

Rigid Air Cage Tracer

. . . greater turning sensitivity

Type C rigid air gage tracer is designed expressly for application to the manufacturer's model EE Toolmaker's lathe and model EE Manufacturing lathe. The unit supersedes the type B tracer mechanism formerly available for these models and is reported to provide greater sensitivity and operating convenience for precision turning of small parts.



All model EE machines equipped with this tracer are electronic drive powered. Result is minimum vibration at all speeds due to absence of rotating elements in the power supply to the drive motor. Maximum diameter change at one slide setting is 3 inches.

Conversion to manual operation for turning, boring and facing can be done in seconds. Feed range of hydraulic slide, set at 45 degrees, is such that perfectly square shoulders can be turned. Monarch Machine Tool Co., Dept. ST, Sidney, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

DATA FORM

Horsepower..........

Input Speed..........

Output Speed..........

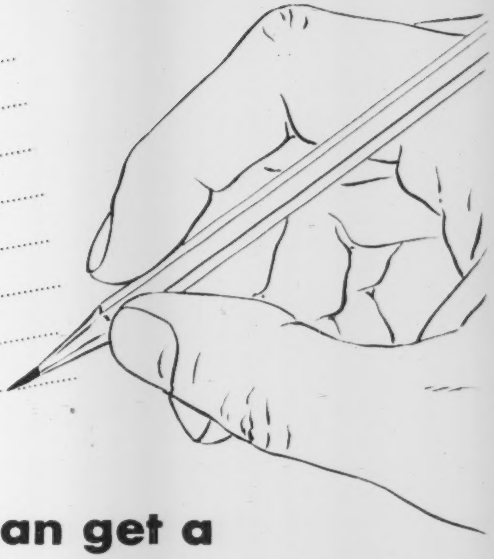
Type of Metal to be Rolled..........

Gauge of Metal..........

Process (Hot or Cold)..........

Nature of Load (Continuous or Intermittent)..........

Type of Drive Motor..........



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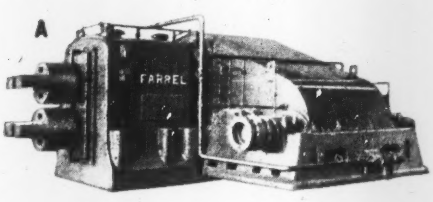
A



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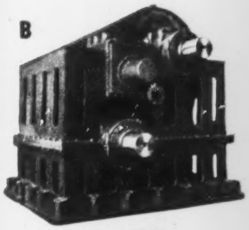

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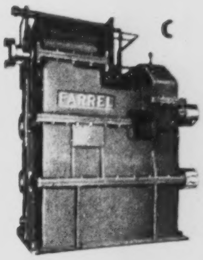

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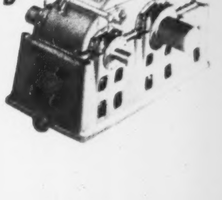

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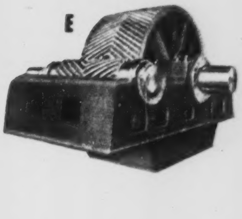
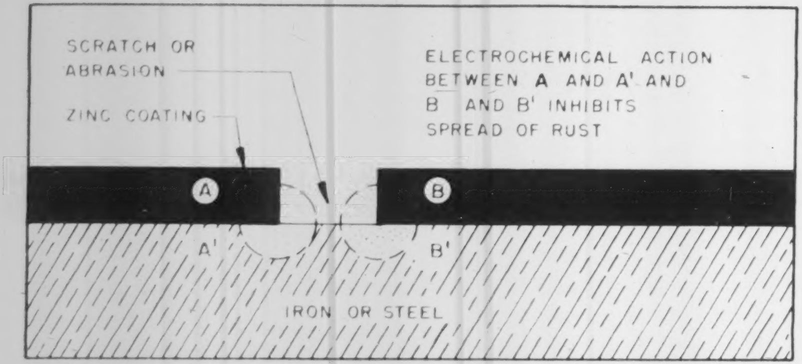


- **A**—1250 HP, 600 RPM double reduction unit combined with 26″ two-high pinion stand
- **B**—10,000 HP piercing and expanding mill drive
- **C**—150 HP tube mill drive, triple reduction, 113:1 ratio
- **D**—800 HP cold strip mill drive
- **E**—1500 HP reversing reel drive (with cover removed)


SCRATCH OR ABRASION
ZINC COATING
ELECTROCHEMICAL ACTION BETWEEN A AND A' AND B AND B' INHIBITS SPREAD OF RUST
A
B
A'
B'
IRON OR STEEL

Drawing shows mechanism of protection where surface of iron or steel is exposed. Same action protects areas surrounding welds and the weld zone

Galvanizing with a Paint Brush

Coats of 93/95 per cent metallic zinc paints protect iron and steel surfaces exposed to corrosive atmospheres. Anodic action also protects uncoated areas

STEEL and iron surfaces exposed to corrosive atmospheres can be "cold galvanized" with paints containing 93 to 95 per cent metallic zinc.

Electrochemical protection afforded is comparable to that of other zinc coatings, including hot-dip galvanizing, electroplating or tumbling. Latter processes also may be restricted to factory produced articles of limited size.

Sealube Co., Wakefield, Mass., makers of the zinc-rich paint, ZRC, says its product can be brushed or sprayed on such things as structural steelwork, bridges, metal window frames, steel staircases, corrugated iron roofing, gutters and downpipes, water tanks, railway installations, gas storage tanks, shipbuilding, dock and harbor installations.

Theory—When corrosive conditions exist on a steel or iron surface, electrochemical cells, which may be classed as wet batteries of extremely low power, are set up between cathodic and anodic areas. Corrosion takes place at anodes, where metal passes into solution in the electrolyte.

Zinc is anodic. When it is placed in electrical contact with a steel surface, for instance, the whole steel object becomes cathodic. Corrosion then is able to attack the zinc coating.

In the early stages of corrosion protective action depends upon zinc sacrificing itself for the other metal, but this does not continue indefinitely. Cathodic action also deposits a protective calcium carbonate or zinc hydroxide film.

Dividends — Uncoated surfaces exposed by abrasion or faulty application, for instance, will rust, but sideways corrosion, as in the case of normal paint finishes, does not occur. Corrosion is absorbed and arrested by the zinc film.

Ability to stop corrosion means that zinc-rich paint can be applied over such surface conditions as adherent rust and mill scale.

Absolutely clean surfaces are not necessary to insure satisfactory adhesion. In fact, rusty surfaces make for direct electric contact, and spread of existing rust is arrested. However, surfaces should be dry and free from grease. Loose rust, scale and paint should be removed by wire brush.

Because of their conductive properties, zinc coatings also are used as welding primers. After welding, parts of the completed structure difficult to reach by normal painting are protected, as well as the welds themselves. Mechanism of protection is the same as that afforded exposed cathodic surfaces.

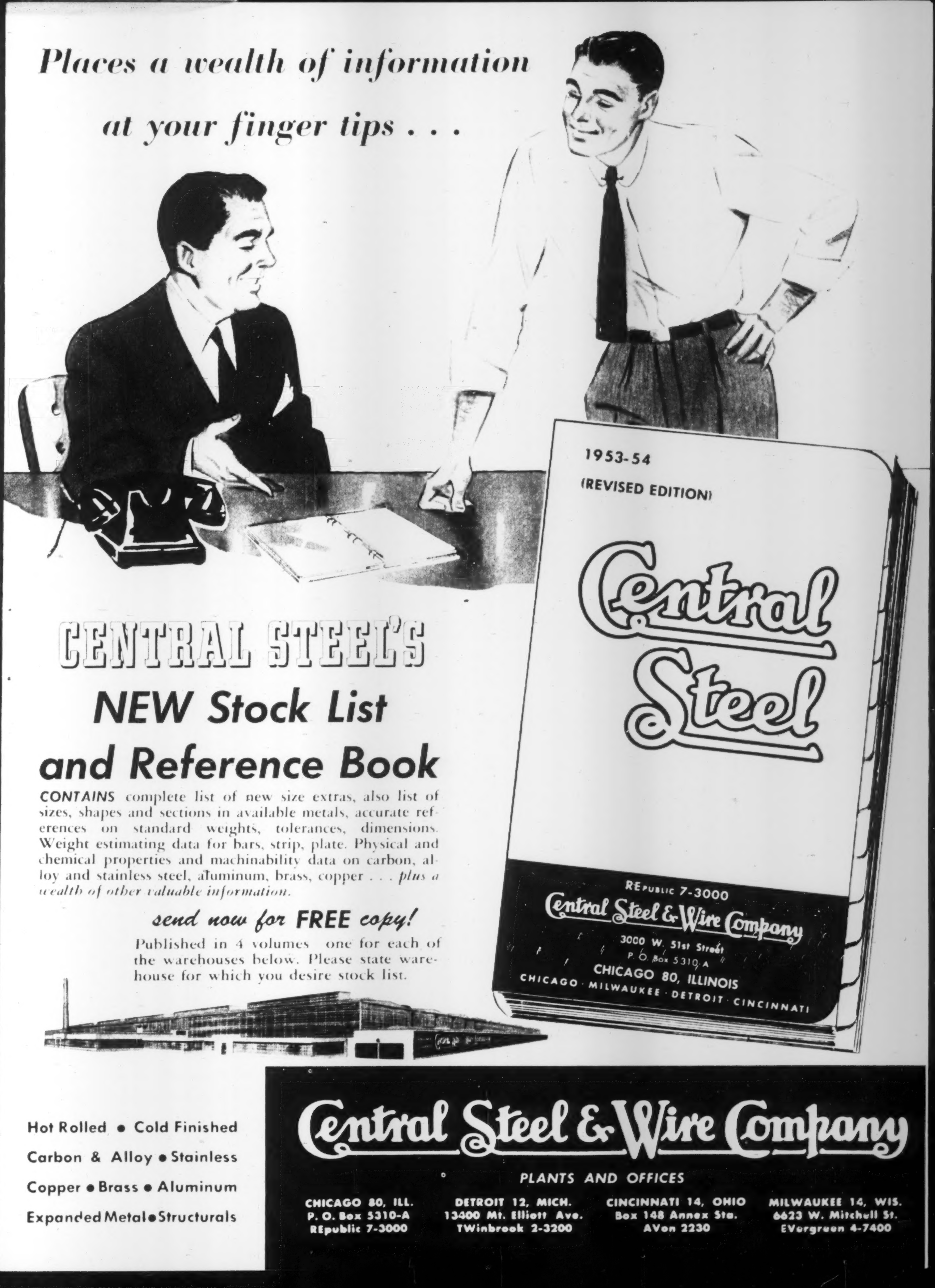
History—Fundamental work on zinc-rich coatings was conducted by researchers at the University of Cambridge. They found that the effectiveness of the paint is wholly dependent upon the high proportion of metallic zinc. Paints containing 95 per cent or more of the metal, for instance, have about 20 times the electrical conducting properties of an 86 per cent zinc paint product.

Vehicles were another problem. Since it was impractical to load linseed oil or stand oil with such high quantities of zinc dust, plasticised polystyrene lacquer and chlorinate rubber lacquer were first used. Sealube employs a new- type resin which has outstanding toughness and adhesion. Their product also contains an anti-settling and film-reinforcing agent.

Application—Zinc-rich paints can be sprayed, but brushing is recommended. Coat of $\frac{1}{4}$ oz per sq ft is prescribed for metal priming. When used alone as a protective and finishing coat, it should be applied 1 oz per sq ft. Coats are touch dry after 30 minutes and firm and hard in approximately 4 hours.

Paint has a light gray, flat finish, which can be used without further decorative treatment. It also serves as a base for oil-bound or synthetic paints and low-temperature baking finishes.

Anti-fouling treatments and compounds can be applied over zinc paint, but it should not be applied over tar or bituminous paints and vice versa.



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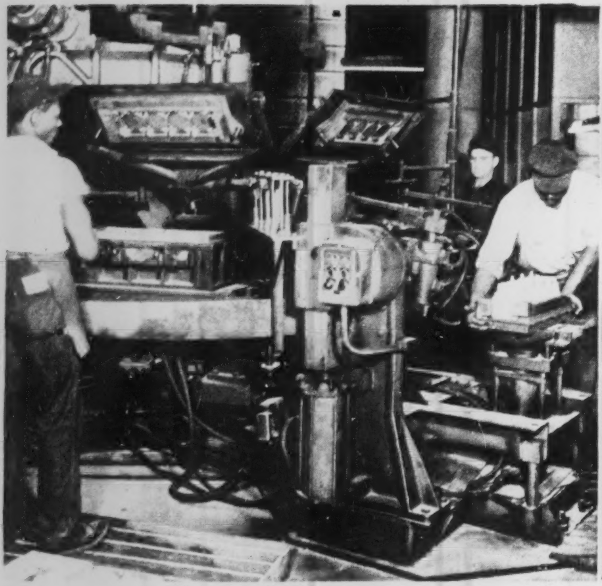
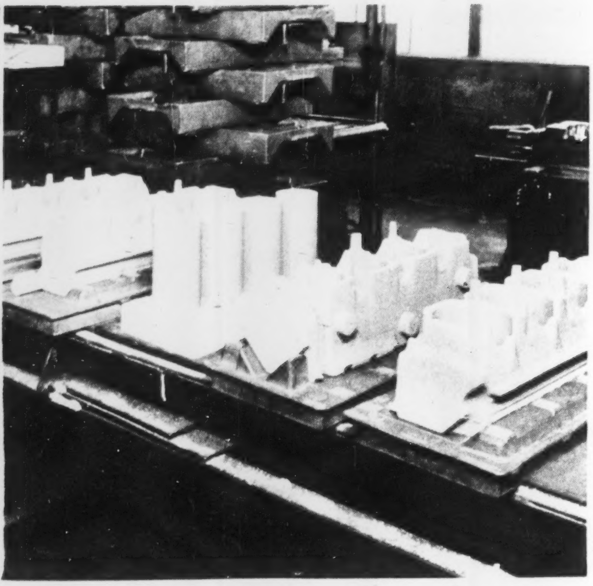


One operator places a dryer over blow core boxes, another removes blown core and places it on tower oven conveyor. Third man sets wire and pieces in core boxes



Machine produces five different cores on repetitive automatic cycle which gives complete set of cores. Cope handler unit permits close estimates of shift's output

More and Better Cores . . .

LESS SPOILAGE

That's what Ferro Machine & Foundry reports with use of Roto-Core machine. Production per manhour is up 50 per cent, and quality of the intricate cores is improved

By REX J. MYERS
Vice President
Ferro Machine & Foundry Inc.
Cleveland

PRODUCING intricate, thin-walled castings for the automotive industry requires a large number of accurate precision cores which must be turned out in large quantities as efficiently as possible. Thanks to a new three-way machine, many of the old troubles have disappeared.

Core production per manhour is greater, and quality and accuracy have also been improved with the installation of a Roto-Core machine designed and built by Osborn Mfg. Co., Cleveland. By mounting the old core boxes on the new machine's floating platen, we now make cores for an 8-cylinder engine.

Five Cores—Machine produces five different cores on a repetitive predetermined automatic cycle which gives sets of cores as needed. By using the cope handler unit, five different cores can be produced at the same time enabling our production and scheduling department to estimate the anticipated output at the end of each shift. This machine gives us a 50 per cent increase in production per manhour with a marked improvement in core quality. Spoilage rate is cut considerably too.

Roto-Core machine equipped with cope handler consists essentially of three basic machines in one. These are synchronized to operate on a repetitive automatic cycle. Core blower and rockover unit operate simultaneously and the indexing table automatically transports the core boxes to five distinct stations including make-ready, blow and roll-over operations.

Continuous Operation—Running continuously, machine is stopped only to change over jobs. Three men tend the machine; one man places a dryer over the blown core boxes, another operator removes the blown core after it has been drawn from the box by the rockover machine and places it on a conveyor which carries the core to a tower oven. Core boxes are automatically blown out or cleaned at the make ready station. The third operator sets wires and loose pieces in empty core boxes preparatory to blowing.

Because of the floating-platen-design indexing table and cope-handler unit of the machine, changeover from one job to another is rapid. It is an easy operation with the aid of an electric hoist or jib crane to remove core boxes and sub-blow plate from the cradle arms of the machine.

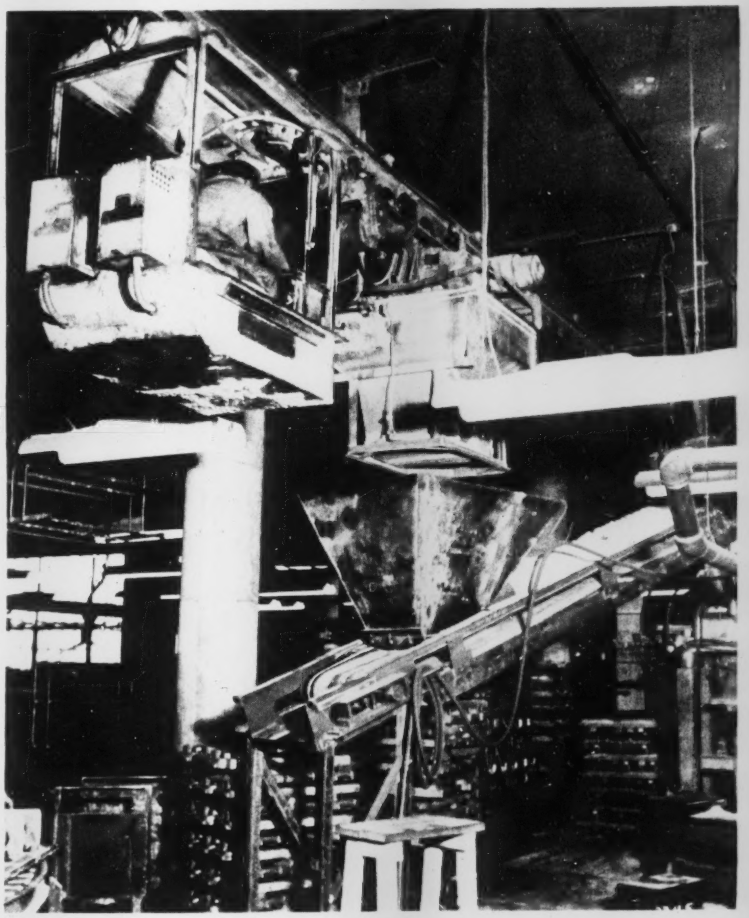
Extra Platens—We have found it advantageous to have extra platens and blow plates for this machine which are interchangeable for all stations. In this way, core boxes can be mounted to the platens away from the machine by our setup man while the machine is in operation. Close, accurate register is provided and complete changeover requires only a few minutes downtime.

Sub-blow plates containing blow holes of proper size and position to suit their individual core boxes are indexed through the five-station cycle together. Attached to the sand reservoir at the core blowing machine is a master blow plate with holes to match all core boxes being run. In operation, core box is indexed into the core blower and the sub-blow plate is automatically lowered over the bottom half of the box.

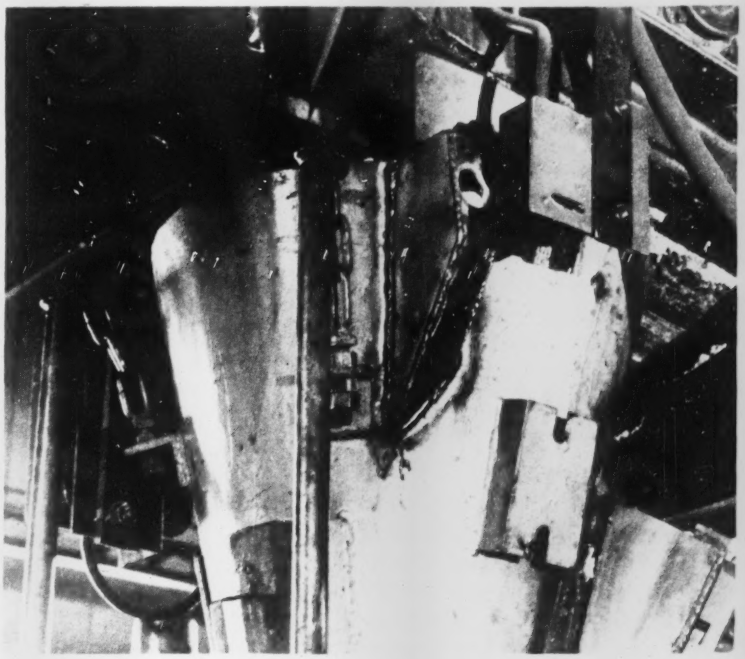
Sub-blow plate covers up the holes in the master blow plate not applicable to its particular core box, thereby allowing sand to be blown into each core box for the most effective results.

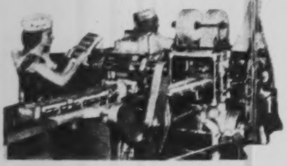
Low Ceiling—Because the machine requires a constant supply of sand in considerable quantity, our plant engineer was faced with the problem of how to feed the machine despite a low ceiling. An ingenious method was devised whereby a hopper located close to the floor fed by an overhead tramrail car sends the sand up a belt conveyor to an overhead hopper which in turn is controlled by a photoelectric cell that starts and stops the conveyor when the sand goes under or over a certain level.

In actual practice the problem of feeding sand is lessened with a Roto-Core machine since it does the work of a number of conventional core blowers, and the hauling of sand is made to one spot.



Getting sand to hopper despite low ceiling is easy. The closeup shows electric eye which controls conveyor by noting the hopper load level





"THIS LUBRICANT REDUCES SERVICE CALLS"

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"LUBRIPLATE greatly reduces unnecessary wear and prolongs the life of machines. It has reduced customer calls for service to a minimum. Our Service Engineers can readily spot machines that have had other than LUBRIPLATE Lubrication, as these machines do not give the service they should."

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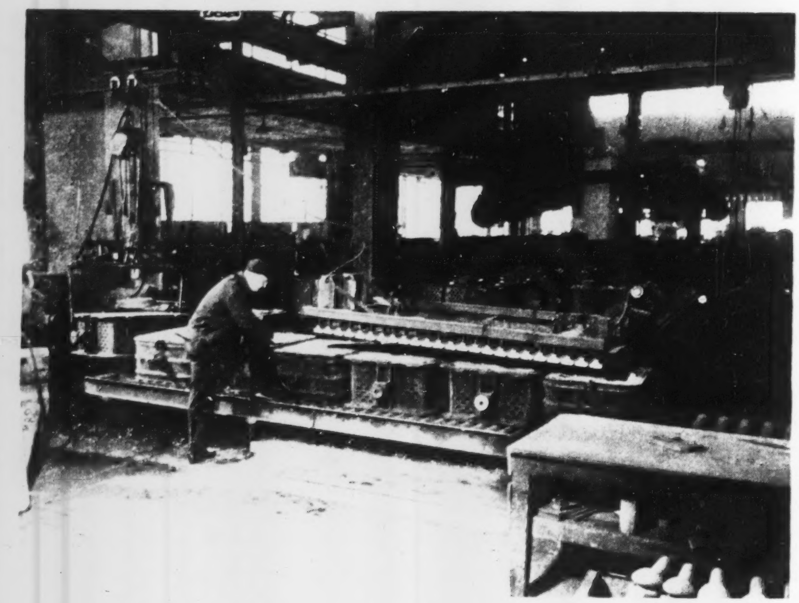


OVERNIGHT AIR-DRYING IS UNNECESSARY TIME CONSUMER
. *conveyorization saves handling labor and floor space*

Silicone Mold Wash Drying Completed in 7½ Minutes

MOLD WASH DRYING need no longer be an all-night or all-day job.

While molds must be dried properly by some means to obtain the surface hardness needed to produce smoothest casting surfaces, far-infrared electric heat can speed the process greatly. Heating by this method is conveyorized, saving handling labor and floor space normally required to stack molds for air drying.

Matter of Minutes—Ohio Steel Foundry, Springfield, O., for example, has replaced overnight air-drying, and now dries silicone wash on molds for gear castings in 7½ minutes with Chromalox far-infrared electric radiant heaters. A single bank of 24 heaters, rated at 1.8 kw each, is suspended over the conveyor carrying the molds. During drying, heaters are lowered to within a few inches of the top of the molds, but when not in use they can be raised to the ceiling.

Only the drag half of each mold is sprayed with the silicone wash in this operation. Cope is not sprayed because it contains very little cavity and none of the gear tooth surface.

No Condensation—About 25 drag molds are dried per hour. After drying, molds are cooled by a fan at the end of the heating line. This prevents condensation from forming and permits immediate mounting of cope and pouring of mold.

Conveyorized production is now accomplished without interruption, and smoother gears are produced with less casting-cleaning labor.

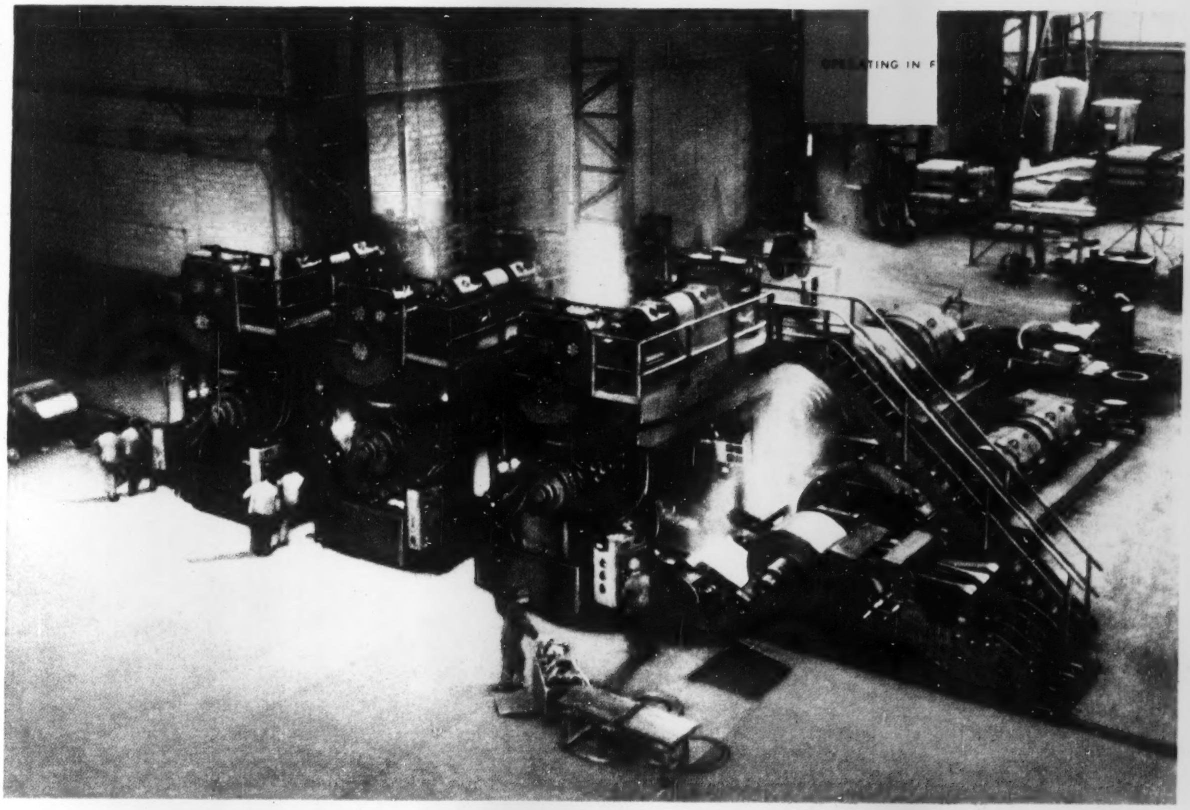
Machine Processes Oil Pans

A semiautomatic, special-purpose machine for processing welded steel oil pans for large diesel engines is announced by Snyder Tool & Engineering Co., Detroit. Parts are in four sizes—V-6, V-8, V-12, and V-16. Operations are boring and facing hand hole openings in each cylinder center line.

Machine consists of a welded steel base 267 inches long and 120 inches wide. The rear section of this base carries a fixture centered on a turntable which swings the fixture through a 180-degree arc during the work cycle. Immediately in front of this is mounted a hydraulically operated feed unit, moving upon rails running the full length of the base. This unit is of automatic or manual operation

UNITED

4-HIGH 3-STAND TANDEM COLD MILL



UNITED

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PITTSBURGH, PENNSYLVANIA

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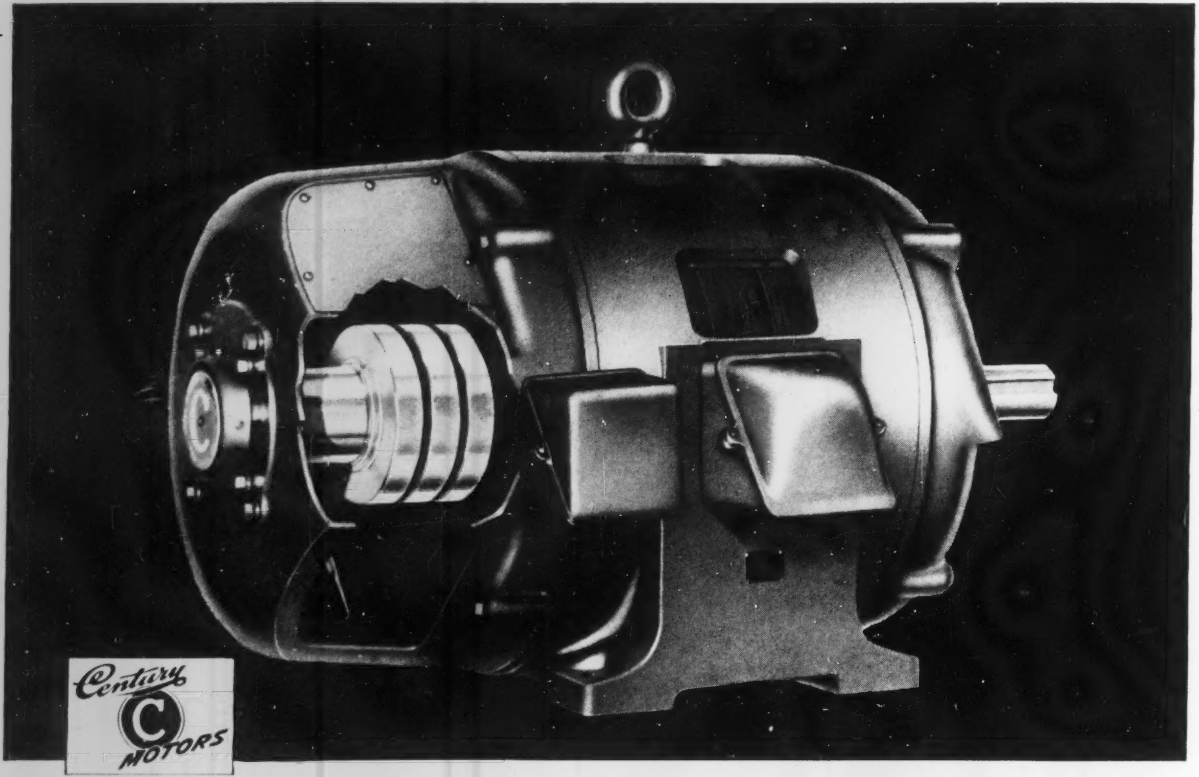
Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls,
Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery
Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments



perfect contact at high speed

Through Advanced Casting Techniques, We Help Our Customers to Better Serve Their Customers.

Bronze collector rings, like these, are important power transmission factors in electric motors—such as those produced by Century Electric Company, St. Louis, Missouri. Making high speed revolutions with the armature, collector rings must be perfect, as sand inclusions, pits, or other flaws cause arcing, with subsequent loss of motor power.

Century Electric Company, leading manufacturer of quality electric motors, generators, and related equipment, was aware of National Bearing Division's outstanding reputation for quality copper-base castings, using advanced foundry techniques and mass production.

Century was confident we could produce, as specified, flawless bronze collector rings for use in their products.

And their confidence was justified.

Our modern, centrifugal, permanent mold technique enables us to exactly meet Century Electric's specifications. This advanced foundry method eliminates sand molds for castings such as these. The bronze is tough and dense, and rings are cast close to size, minimizing machining. And Century enjoys dollar savings through our production-run economies.

Most important to them, however, is the fact that they are now providing their customers with equipment that includes collector rings of the highest quality.

If your product requires precision-cast bronze or other copper-base components, it will pay you to investigate National Bearing Division. We produce copper-base castings, large or small, with or without machining. And our production-run economies will probably save you money.

Write National Bearing Division for full information and your copy of our catalog.

Brake Shoe

NATIONAL BEARING DIVISION

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STEEL

September 7, 1953

Market Outlook

MOST problems of steel procurement will be over by the fourth quarter.

Already many of them have disappeared, and others are fast waning.

Reduced demand for steel and high production of it have taken the pressure off the steel market. No longer are buyers willing to order more than they need or far in advance of the need. Neither will they pay premium prices nor accept material unsuited for their needs.

IDLE CAPACITY— This increased selectivity in buying steel is holding steel ingot production below capacity. Notably idle is ingot capacity that earlier in the year was used to make tonnage for conversion steel, a costly product. For example, some electric furnace capacity in Ohio is cold now; these furnaces were installed during World War II to make alloy steel, but as they were not needed for alloy output during the Korean war they were used to produce carbon steel for conversion while consumers were willing to pay most any price for steel.

CUTS OUTPUT— A small midwestern electric steel producer, which for a long time has been running at 100 per cent of capacity, cut its output last week to 70 per cent where it will remain. The plant will be on a five-day 24-hour basis, instead of its former seven-day 24-hour schedule.

A mill that has been charging premium prices for steel has been producing ingots at only 25 per cent of capacity for the last two weeks, the plant reporting a breakdown in its rolling equipment. However, previous to this drop the plant's ingot operations were at only 70 per cent of capacity.

LOWERS PRICE— A midwestern wire drawer which had been charging premium prices lowered them 17 to 27 cents a hundred pounds.

The mills charging regular prices are not in all cases operating at full capacity. With demand somewhat softer, they are less inclined than they were to push equipment to the limit or do things that are uneconomical, and they are increasingly inclined to shut down facilities for repairs before a breakdown forces a stop.

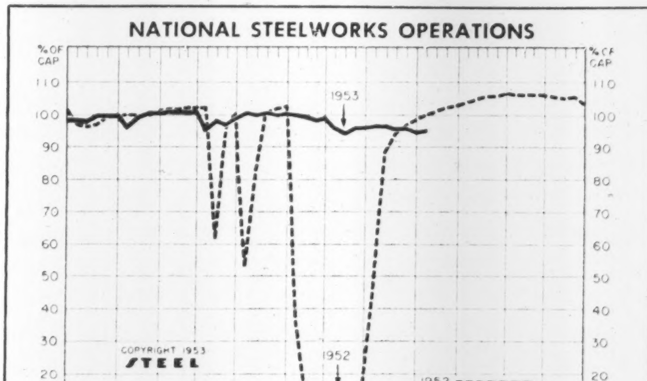
SLOWER PACE— In the first and second quarters of this year, the national rate of steel ingot production was as high as 103 per cent of capacity, but since May the rate has never exceeded 100 per cent.

Output of steel for ingots and castings in the week ended Sept. 5 was 95.5 per cent, up 1 point over the preceding week.

FANNING OUT— The easing in demand for finished steel products extends even to those that have been in tight supply, like large carbon bars, cold-rolled carbon sheets and carbon plate. The easing, however, does not extend to wide flange beams and seamless tubing. Supply of the latter may improve, though, as demand for large carbon steel bars declines. Rounds from which seamless tubing is made come from the same mills that produce large bars.

SALES PUSH— With steel demand easing, steel producers are intensifying sales efforts. If the easing goes far enough they'll note a geographical change in buying patterns. When a buyer can get all the steel he needs from the closest mill he'll concentrate his buying there and shift away from distant mills to hold freight costs down.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Sept. 5	Change	Same Week 1952	Same Week 1951
Pittsburgh	96	1*	98	97.5
Chicago	100.5	6*	101.5	101.5
Mid-Atlantic	97	+ 1	97	98
Youngstown	106	0	106	98
Wheeling	96	+ 2	96	96.5
Cleveland	103.5	+ 1.5*	105	100.5
Buffalo	106.5	0	101.5	104
Birmingham	97	3	100	100
New England	83	2	90	85
Cincinnati	76.5	1	90	103
St. Louis	95	+ 0.5	76	81
Detroit	109.5	+ 3.5	104	96
Western	102.5	-0	103	102
Estimated National Rate	95.5	+ 1	100	99

*Change from preceding week's revised rate. Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953, 2,077,040 tons in 1952; 1,999,034 tons in 1951.

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Sept. 1

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.400
Rails, light, 40 lb	5.767
Tie Plates	5.125
Axles, railway	7.250
Wheels, freight car, 33 in. (per wheel)	47.000
Plates, carbon	4.550
Structural Shapes	4.383
Bars, tool steel, carbon (lb)	0.415
Bars, tool steel, alloy, oil hardening die (lb)	0.505
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.135
Bars, tool steel, H.R. alloy, high speed W18, Cr 4, V 1 (lb)	1.730
Bars, H.R., alloy	$8.675
Bars, H. R., stainless, 303 (lb)	0.418
Bars, H.R., carbon	4.850
Bars, reinforcing	4.775
Bars, C.F., carbon	7.860
Bars, C.F., alloy	11.075
Bars, C.F., stainless, 302 (lb)	0.433
Sheets, H.R., carbon	4.765
Sheets, C.R., carbon	5.904
Sheets, galvanized	7.015
Sheets, C.R., stainless, 302 (lb)	0.548
Sheets, electrical	9.183
Strip, C.R., carbon	7.371
Strip, C.R., stainless, 430 (lb)	$0.415
Strip, H.R., carbon	5.113
Pipe, black, buttweld (100 ft)	14.454
Pipe, galv., buttweld (100 ft)	17.895
Pipe, line (100 ft)	141.960
Casing, oil well, carbon (100 ft)	149.516
Casing, oil well, alloy (100 ft)	214.113
Tubes, boiler (100 ft)	‡
Tubing, mechanical, carbon (100 ft)	‡
Tubing, mechanical, stainless, 304 (100 ft)	161.193
Tin plate, hot-dipped, 1.25 lb	$8.433
Tin plate, electrolytic, 0.25 lb	7.133
Black plate, can making quality	6.233
Wire, drawn, carbon	7.713
Wire, drawn, stainless, 430 (lb)	0.545
Bale ties (bundle)	5.653
Nails, wire, 8d common	7.530
Wire, barbed (80-rod spool)	6.847
Woven wire fence (20-rod roll)	16.174

‡Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Sept. 1 1953	Aug. 25 1953	Month Ago	Aug. Average
(1947-1949=100)	141.7	141.7	141.7	141.7

STEEL's FINISHED STEEL PRICE INDEX

	Sept. 3 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.38	189.38	189.38	181.31	143.08
Index in cents per lb.	5.130	5.130	5.130	4.912	3.876

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Sept. 3 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.56	$115.56	$115.56	$110.98	$95.05
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55.04	44.30
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	43.86
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	44.68
Steelmaking Scrap, GT	40.50	42.17	44.08	43.00	43.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Sept. 3 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4,38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	3.975-4.425	3.975-4.425	3.975-4.425	3.75-4.225	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.275
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.125
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.15
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	6.20-6.35	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, $\frac{7}{32}$-$\frac{5}{8}$", Pitts.	4.525	4.525	4.525	4.325	3.45

PIG IRON, Gross Ton

	Sept. 3 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	43.00
Basic, deld. Phila.	60.75	60.75	60.75	59.25	46.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	43.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	43.50
No. 2 Fdry, deld. Phila.	61.25	61.25	61.25	59.75	46.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	43.50
Malleable, Chicago	56.50	56.50	56.50	55.00	43.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	228.00*	148.00*

*78-82% Mn, per gross ton, Etna, Pa. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$42.50	$44.50	$44.50	$44.00	$42.75
No. 1 Heavy Melt, E. Pa.	41.50	42.50	44.25	41.50	45.50
No. 1 Heavy Melt, Chicago	37.50	39.50	43.50	42.50	41.75
No. 1 Heavy Melt, Valley	41.50	42.50	45.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	40.50	41.50	45.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	41.50	42.50	43.75	43.00	46.25
Rails, Rerolling, Chicago	54.00	54.50	56.00	52.50	63.25
No. 1 Cast, Chicago	38.00	41.00	42.00	48.50	70.00

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99% plus, ingots 21.50, pigs 20.00, 10,000 lbs or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 112, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 21.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 34.50, Lone Star brand, 35.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

DAILY NONFERROUS PRICE RECORD

	Price Sept. 3	Last Change	Previous Price	Aug. Avg.	July Avg.	Aug., 1952 Avg.
Copper	29.00-30.00	Aug. 19	28.50-30.00	29.375	29.846	24.500
Lead	13.80	July 23	13.55	13.800	13.483	15.800
Zinc	10.50	Sept. 2	11.00	11.000	11.000	14.067
Tin	83.50, nom.	Sept. 2	83.75	80.530	81.577	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 24	20.50	21.500	20.923	19.923
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99% plus, deld.; Magnesium, 99.8%, Freeport, Tex.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97-99%, $2.40 per lb for 550 lb keg; $2.42 per lb for 100 lb case; $2.47 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.00-30.00 deld. Conn. Valley, 29.125-30.125 deld. Midwest; Lake 30.125 deld.; Fire refined 29.75 deld.

Germanium: 99.9%, $350.00 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis. New York basis, add 0.20.

Lithium: 98%, $10-$13 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1.3 in. dia., 45.00, 100 to 4999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more.

Mercury: Open market, spot, New York, $188-$191 per 76-lb flask.

Molybdenum: Powder, 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots, for addition to cast iron 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $110-$150 per troy oz. nom.

Palladium: $23-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16.00-$21.50 per mg. radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $80-$85 per troy oz.

Selenium: 99.5%, $4.25-$4.75 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $42.45 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 83.50, nom.

Tungsten Powder: 98.8%, carbon reduced, 1000 lb lots $5.35 per lb deld.; less than 1000 lb $5.50; 99% plus hydrogen reduced $7.70. Treated ingots $10.43 per lb.

Zinc: Prime western 10.50, brass special 10.75, intermediate 11.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.85, special high grade 12.00, die casting alloy ingot 15.00, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys 22.50-23.00; No. 12 foundry alloy (No. 2 grade) 21.75-22.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.75; 13 alloy, 0.60 Cu max., 24.00-24.75; 195 alloy 22.50-24.00; 108 alloy 22.50-23.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75-24.00; grade 2, 22.50-23.00; grade 3, 21.50-22.00; grade 4, 20.50-21.00.

Brass Ingot: Red brass, No. 115, 24.50; tin bronze, No. 225, 35.25; No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75; manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $19 per cwt; pipe, full coils $19 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 19.50-20.75.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R. ..	86.5	67.5	92.5
Strip, C.R. ...	92.5	70.5	98.5
Plate, H.R. ..	84.5	66.5	90.5
Rod, Shapes ..	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.6
Shot, Blocks ..	....	60.0	....

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more.)

Sheets and Circles: 2S and 3S mill finish c.l.c.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

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* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., widths or diameters 24-60 in., lengths 72-240 in.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* Widths or diameters 24-48 in., lengths 72-180 in.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 42.05-32.76, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 49.2 to 37.6 in random lengths 0.375-4 in. thick, widths 0.750-10 in.

Industrial Roofing Sheet (0.032-in. thick): Flat, 42.75 in. wide, lengths 60-144 in., $2.838 to $6.816 per sheet. Corrugated, 35 in. wide, lengths 60-144 in., $2.862 to $6.874 per sheet.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more 0.188-1 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clipping 13.00, low copper clippings 10.00, mixed clippings 10.00; old sheet 9.00; borings and turnings 6.50; pistons and struts 6.50; crankcases 9.00; industrial castings 9.00.

Copper and Brass: Heavy copper and wire, No. 1 21.00; No. 2 copper 18.50-19.50; light copper 16.50; No. 1 composition red brass 15.00; No. 1 composition turnings 14.50; mixed brass turnings 9.00; new brass clippings 18.50 nom.; No. 1 brass rod turnings 13.00 nom.; light brass 9.00; heavy yellow brass 11.00; new brass rod ends 17.50 nom.; auto radiators, unsweated 11.00; cocks and faucets 13.00; brass pipe 14.50.

Lead: Heavy 10.00-11.00; battery plate 6.00-6.25; linotype and stereotype 12.25; electrotype 11.50; mixed babbitt 12.50.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Monel: Clippings 28.00-30.00; old sheet 26.00-27.00; turnings 21.00-22.00; rods 28.00-30.00.

Nickel: Sheets and clips 80.00; rolled anodes 80.00; turnings 50.00; rod ends 80.00.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-38.00.

Zinc: Old zinc 4.00; new die cast scrap, 4.00; old die cast scrap, 3.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 15.00-15.50; 51S, 52S clippings 15.00-15.50; 14S, 17S, 24S, clippings 14.00-14.50; mixed clippings 14.00-14.50; old sheet 12.50-13.00; old cast 12.50-13.00; clean old cable, free of steel 14.50-15.50; borings and turnings 13.00-13.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 23.00; No. 2 copper 21.50; light copper 20.00; refinery brass (60% copper) per dry copper content 18.50; auto radiators nom.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 23.00-23.50; No. 2 copper 21.50; light copper 20.00; No. 1 composition borings 16.50; No. 1 composition solids 17.25; heavy yellow brass solids 13.00; yellow brass turnings 12.25; radiators 13.00.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 47.14, oval 46.64, base prices; electrodeposited 38.38, carload lots; cast 44.14, ton lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.015; 200-499 lb $1; 500-999 lb 99.50; 1000 lb or more 99.

Zinc: Bar 20.00, bar or flat top 19.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00, over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulfate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulfate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,900 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.500; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80, granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 66.20; 100-600 lb 52.40; 700-1900 lb 49.80; 2000-9900 lb 48.10; 10,000 lb or more 47.

Stannous Chloride (Anhydrous): Less than 50 lb $1.509, 50 lb $1.169; 100-300 lb $1.019; 400-900 lb 99.40; 1000-1900 lb 97; 2000-4900 lb 93.30; 5000-19,000 lb 87.20; 20,000 lb and over 81.10.

Stannous Sulfate: Less than 50 lb $1.211; 50 lb 91.10; 100-1900 lb 89.10; 2000 lb and over 87.10.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

BRASS MILL PRICES

(Effective Apr. 1, 1953)

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	41.66	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	N.A.	48.92	18.250	18.000	17.500
Commercial Bronze, 90%....	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	N.A.	N.A.	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%....	66.58	67.08	N.A.	N.A.	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	N.A.	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	N.A.	....	18.250	18.000	17.500
Muntz Metal	43.96	39.37	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. N.A. New price not posted as yet.

Nonferrous Metals

How much metal should go into the national stockpile? That's a knotty problem. No answer that pleases everyone has yet been found

A STOCKPILE storm still overhangs Washington's heat.

Problems concerning the two top nonferrous metals aluminum and copper have yet to be resolved. Further complications could develop in nickel also. To date no answers have been found that can please everyone, even the various government agencies involved.

Aluminum Snafu Fourth-quarter stockpiling of aluminum will be highest of any quarter to date, the Office of Defense Mobilization announced last week. Military and atomic energy requirements at 117,500 tons will be about 10 per cent under the third quarter though. U. S. primary production this year is estimated by the agency at 1,260,000 tons, as compared to 1952's 937,000 tons.

The real hassle began when ODM said that civilian users would get "appreciably more aluminum" in the October-December period than in any previous quarter. Industry men rushed a rebuttal and the next day ODM back-tracked, clarifying "appreciably" as meaning between two and three per cent more aluminum, both primary and secondary, though the increase could go up to 6 per cent if imports increased as expected. Aluminum in primary form is required by about 80 per cent of consumers.

In the Background Some industry men believe ODM is sponsoring a "soft policy" and submitting to pressure of civilians. The assurances of good fourth-quarter supply hinge on no power shortages in the Northwest this year.

This forecast means extra headaches to NPA; it must answer to aluminum-hungry civilian fabricators anxious for a bigger slice of the pie.

Stockpile metal from a third round of expansion will be slow in coming if it ever comes. Further decision on financial assistance to Olin and Wheland won't come until October at the earliest. Trade talk is that the government hopes to avoid a third round of expansion because of budget pressures to cut down accelerated amortization.

Copper and Politics Heat's being applied by industry to the government's negotiations to purchase Chilean copper. Some American copper companies have asked the government to afford them similar treatment and consider their bids to supply stockpile copper, or to open the purchase to competitive bidding. Government men were thus forced to label the Chilean deal, still under negotiation by the State department, as primarily a diplomatic one. Rumblings about this one will surely be heard on Capitol Hill when Congress reconvenes.

STEEL'S Metal Price Averages for Aug., 1953
(Cents per pound)

Electrolytic Copper, del. Conn.	29.375
Lead, St. Louis	13.800
Prime Western Zinc, E. St. Louis	11.000
Straits Tin, New York	80.530
Primary Aluminum Ingots, del.	21.500
Magnesium	27.000
Nickel, f.o.b. refinery	60.000

With some action on Chilean copper will come price decisions by U. S. producers. Output from American producers' mines in Chile is being cut from 38,000 tons a month to 26,000 tons. The market hasn't absorbed all available copper over the summer when Chilean metal wasn't coming in. When it does come, something will have to give, as other foreign suppliers will fight to keep their toehold here and a rash of price cutting could break out. If copper's price drops below floor contract guarantees, the stockpile could be confronted with substantially more of the red metal than it really needs.

Brass Mill Prices Cut

Break in brass mill prices came last week in the first cut since price decontrol. Brass prices had been quoted on 32.6-cent copper, a combination of domestic-foreign prices that hasn't been of true cost basis for several months. Revere Copper & Brass Inc. brought out a new schedule based on 30-cent copper and current prices for high grade zinc, tin, nickel, aluminum, lead and other alloying materials. Copper sheet, rod and tube was cut 2.1 cents to 48.38, 45.98 and 48.44 cents, respectively. Yellow brass sheet, strip and plate are down 1.15 cents to 41.72 cents. Red brass rod is down 1.52 cents to 45.38, and commercial bronze sheet down 1.81 cents to 46.95. Other products dropped in proportion to copper content and contained materials, phosphor bronze skidding 5.74 cents because of drastically lower tin prices.

Now that the ice has been broken, other brass mills will be forced to come down too. Lowered scrap allowances followed quickly. Prompt delivery in most brass mill products is the rule today, the majority being in the three to four-week range. Cupro nickel and silicon bronze take about four to six weeks. Imports of brass mill products, estimated at close to half-million pounds a week, are hurting business.

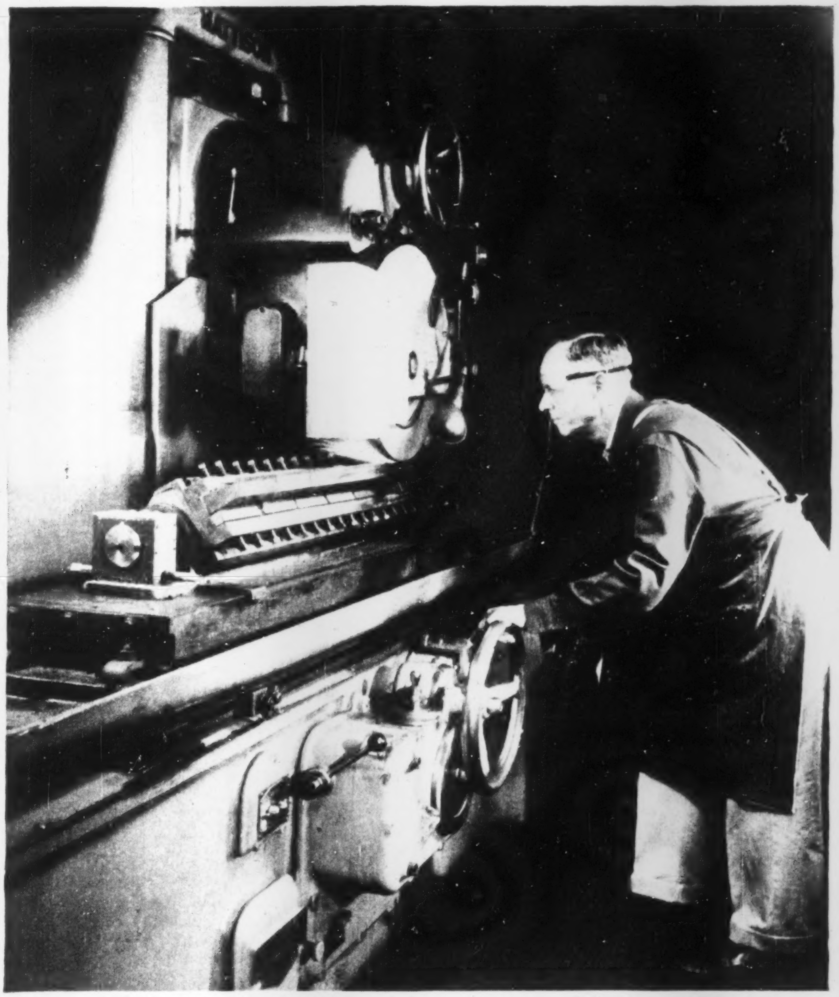
Aluminum's in Seasonal Lull

Seasonal lull in aluminum mill products is noticeable too, though the market is expected to revive as September progresses. Mills are sold out for about 60 days on most products and are five to six weeks late on schedules. Slackened purchasing in other metals has brought out a few soft spots in aluminum too. More buyers are pondering the question of how much working capital to tie up in protective buying in the fourth quarter.

Fear of shortage is still stronger in aluminum than in any other metal. Order duplications have fallen off and more setting-back of delivery is noticed, but few cancellations can be found. Extrusions are still hard to get but alloy sheet has eased a bit and tubing is weak because television antenna production is off. Wire, rod and bar business continues brisk. Openings on November books can generally be found for most wrought products.

Zinc Price Cut

Zinc price was nipped a half-cent last week by American Smelting & Refining Co. to 10.50 f.o.b. E. St. Louis. With the move, Asarco abandoned its delivered pricing system that had producers wrought up over the past month or so. One vestige of the delivered system remains—freight in excess of 0.50 will be absorbed, putting a ceiling delivered price anywhere in the U. S. of 11.00 cents.



Mattison Grinder beats old time (15 hours) by 12 hours

The picture above shows a punch and die grinding operation on a Mattison High-Powered Precision Surface Grinder at Lyon Metal Products, Incorporated. Previous time on a converted planer-grinder was 15 hours — now with a Mattison Grinder equipped with special fixture, grinding time has been reduced to 3 hours.

Mattison Grinders are proving profitable investments in plants where "time out" for reconditioning is a vital factor in meeting production schedules. Surfaces are reconditioned and edges sharpened in a minimum of time, eliminating costly delays and holdup of production. Many manufacturers installing the Mattison Grinder for reconditioning dies find many other uses for it in grinding flat surfaces where accuracy and fine finish are required. For complete information on the Mattison High-Powered Precision Surface Grinder, send for free copy of our latest circular.

MATTISON MACHINE WORKS
ROCKFORD • ILLINOIS

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers folowing mill points indicate producing company, key on page 171. Key to footnotes, page 173

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)

Fontana,Calif K1	$86.00
Munhall,Pa U5	59.00

INGOTS Alloy (NT)

Detroit R7	$63.00
Fontana,Calif K1	88.00
Midland Pa C18	62.00
Munhall,Pa U5	62.00

BILLETS, BLOOMS & SLABS

Carbon Rerolling (NT)

Aliquippa,Pa J5	$62.50
Bessemer,Pa U5	62.00
Clairton,Pa U5	62.00
Ensley,Ala T2	62.00
Fairfield,Ala T2	62.00
Fontana,Calif K1	81.00
Gary,Ind U5	62.00
Johnstown,Pa B2	62.00
Lackawanna,N.Y B2	62.00
Munhall,Pa U5	62.00
So Chicago,Ill U5	62.00
So Duquesne,Pa U5	62.00

Carbon, Forging (NT)

Aliquippa,Pa J5	$75.50
Bessemer,Pa U5	75.50
Buffalo R2	75.50
Canton,O R2	75.50
Clairton,Pa U5	75.50
Cleveland R2	75.50
Conshohocken,Pa A3	82.50
Detroit R7	78.50
Ensley,Ala T2	75.50
Fairfield,Ala T2	75.50
Fontana,Calif K1	94.50
Gary,Ind U5	75.50
Geneva,Utah C11	75.50
Houston S5	85.50
Johnstown,Pa B2	75.50
Lackawanna,N.Y. B2	75.50
LosAngeles B3	94.50
Munhall,Pa U5	75.50
Seattle B3	94.50
So Chicago R2,U5,W14	75.50
So Duquesne,Pa U5	75.50
So SanFrancisco B3	94.50

Alloy, Forging (NT)

Bethlehem,Pa B2	$82.00
Buffalo R2	82.00
Canton,O R2	82.00
Canton,O T7	84.60
Conshohocken,Pa A3	89.00
Detroit R7	85.00
Fontana,Calif K1	101.00
Gary,Ind U5	82.00
Houston S5	92.00
Ind Harbor,Ind Y1	82.00
Johnstown,Pa B2	82.00
Lackawanna,N.Y. B2	82.00
LosAngeles B3	102.00
Massillon,O R2	82.00
Midland,Pa C18	82.00
Munhall,Pa U5	82.00
So Chicago R2,U5,W14	82.00
So Duquesne,Pa U5	82.00
Struthers,O Y1	82.00
Warren,O C17	82.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2	$92.50
Canton,O R2	92.50
Cleveland R2	92.50
Fontana,Calif K1	113.50
Gary,Ind U5	92.50
Massillon,O R2	92.50
So Chicago,Ill R2	92.50
So Duquesne,Pa U5	92.50

SHEET BAR (NT)

Fontana,Calif K1	$93.18

SKELP

Aliquippa,Pa J5	3.85
Munhall,Pa U5	3.75
Warren,O R2	3.75
Youngstown R2, U5	3.75

WIRE RODS

Aliquippa,Pa J5	4.525
Alton,Ill L1	4.70
AlabamaCity,Ala R2	4.525
Buffalo W12	4.525
Cleveland A7	4.525
Donora,Pa A7	4.525
Fairfield,Ala T2	4.525
Fontana,Calif K1	5.325
Johnstown,Pa B2	4.525
Houston S5	4.925
Minnequa,Colo C10	4.775
Monessen,Pa P7	4.725
Joliet,Ill A7	4.525
KansasCity,Mo S5	4.865
LosAngeles B3	5.325
No Tonawanda,N.Y B11	4.525
Pittsburg,Calif C11	5.175
Portsmouth,O. P12	4.725
Roebling,N.J. R5	4.625
So.Chicago,Ill R2	4.525
SparrowsPoint,Md B2	4.625
Sterling,Ill (1) N15	4.525
Struthers,O Y1	4.525
Torrance,Calif C11	5.325
Worcester,Mass. A7	4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes

AlabamaCity,Ala. R2	4.10
Aliquippa,Pa J5	4.10
Bethlehem,Pa. B2	4.15
Bessemer,Ala T2	4.10
Clairton,Pa U5	4.10
Fairfield,Ala T2	4.10
Fontana Calif K1	4.75
Gary,Ind U5	4.10
Geneva,Utah C11	4.10
Houston S5	4.60
Ind Harbor,Ind. I-2	4.10
Johnstown,Pa B2	4.15
KansasCity,Mo S5	4.80
Lackawanna,N.Y. B2	4.15
LosAngeles B3	4.80
Minnequa,Colo C10	4.55
Munhall,Pa U5	4.10
Niles,Calif (22) P1	4.91
Phoenixville,Pa. P4	4.95
Seattle B3	4.85
So.Chicago,Ill U5, W14	4.10
So SanFrancisco B3	4.75
Torrance,Calif. C11	4.80
Weirton,W.Va W6	4.35

Wide Flange

Bethlehem,Pa B2	4.15
Clairton,Pa U5	4.10
Fontana,Calif K1	5.30
Lackawanna,N.Y. B2	4.15
Munhall,Pa U5	4.10
So.Chicago,Ill. U5	4.10

Alloy Stand. Shapes

Clairton,Pa U5	5.00
Fontana,Calif K1	6.40
Gary,Ind U5	5.00
Munhall,Pa U5	5.00
So Chicago,Ill. U5	5.00

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5	6.175
Bessemer,Ala T2	6.175
Bethlehem,Pa B2	6.20
Clairton,Pa. U5	6.175
Fairfield,Ala T2	6.175
Fontana,Calif K1	6.825
Gary,Ind. U5	6.175
Geneva,Utah C11	6.175
Ind Harbor,Ind. I-2	6.175
Ind Harbor Ind. Y1	6.675
Johnstown,Pa B2	6.20
Lackawanna,N.Y. B2	6.20
LosAngeles B3	6.85
Munhall,Pa. U5	6.175
Seattle B3	6.90
So.Chicago,Ill U5, W14	6.175
So.SanFrancisco B3	6.80
Struthers,O. Y1	6.675

H.S., L.A. Wide Flange

Bethlehem,Pa B2	6.20
Lackawanna,N.Y. B2	6.20
Munhall,Pa U5	6.125
So.Chicago,Ill U5	6.125

BEARING PILES

Munhall,Pa. U5	4.10
So.Chicago,Ill. U5	4.10

—PILING—

STEEL SHEET PILING

Ind Harbor,Ind. I-2	4.925
Lackawanna,N.Y. B2	4.925
Munhall,Pa U5	4.925
So Chicago,Ill. U5	4.925

—PLATES—

PLATES, Carbon Steel

AlabamaCity,Ala. R2	4.10
Aliquippa,Pa. J5	4.10
Ashland,Ky. (15) A10	4.10
Bessemer,Ala. T2	4.10
Clairton,Pa. U5	4.10
Claymont,Del. C22	4.55
Cleveland J5, R2	4.10
Coatesville,Pa L7	4.35
Conshohocken,Pa. A3	4.55
Ecorse,Mich. G5	4.65
Fairfield,Ala T2	4.10
Fontana,Calif.(30) K1	4.75
Gary,Ind U5	4.10
GraniteCity,Ill. G4	4.60
Geneva,Utah C11	4.10
Harrisburg,Pa. C5	6.50
Houston S5	4.60
Ind Harbor,Ind 1-2, Y1	4.10
Johnstown,Pa. B2	4.10
Lackawanna,N.Y. B2	4.10
Minnequa,Colo. C10	4.95
Munhall,Pa. U5	4.10
Pittsburgh J5	4.10
Riverdale,Ill. A1	4.10
Seattle B3	5.00
Sharon,Pa S3	4.10
So.Chicago,Ill U5, W14	4.10
SparrowsPoint,Md B2	4.10
Steubenville,O. W10	4.10
Warren,O R2	4.10
Weirton,W.Va W6	4.40
Youngstown R2, U5, Y1	4.10

PLATES, Carbon A.R.

Fontana,Calif. K1	5.90
Geneva,Utah C11	5.25

PLATES, Wrought Iron

Economy,Pa. B14	9.30

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5	6.25
Bessemer,Ala. T2	6.25
Clairton,Pa. U5	6.25
Cleveland J5	6.25
Conshohocken,Pa. A3	6.50
Ecorse,Mich. G5	7.10
Fairfield,Ala. T2	6.25
Fontana,Calif.(30) K1	6.95
Gary,Ind. U5	6.25
Geneva,Utah C11	6.25
Ind Harbor,Ind. I-2	6.25
Ind Harbor,Ind. Y1	6.75
Johnstown,Pa. B2	6.25
Lackawanna,N.Y. B2	6.25
Munhall,Pa. U5	6.25
Pittsburgh J5	6.25
Seattle B3	7.15
Sharon,Pa. S3	6.25
So.Chicago,Ill. U5, W14	6.25
SparrowsPoint,Md. B2	6.25
Youngstown U5	6.25
Youngstown Y1	6.75

PLATES, Alloy

Claymont,Del. C22	5.65
Coatesville,Pa. L7	5.75
Fontana,Calif. K1	6.60
Gary,Ind. U5	5.55
Johnstown,Pa. B2	5.55
Munhall,Pa. U5	5.55
Sharon,Pa. S3	5.70
So.Chicago,Ill. U5, W14	5.55
SparrowsPoint,Md. B2	5.55

FLOOR PLATES

Cleveland J5	5.15
Conshohoken,Pa. A3	5.15
Ind.Harbor,Ind 1-2	5.15
Munhall,Pa. U5	5.15
So.Chicago,Ill. U5	5.15

PLATES, Ingot Iron

Ashland,c.l. (15) A10	4.35
Ashland,l.c.l. (15) A10	4.85
Cleveland, c.l. R2	4.70
Warren,O. c.l. R2	4.70

—BARS—

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2	4.15
Aliquippa,Pa. J5	4.15
Alton,Ill. L1	4.50
Atlanta,Ga. A11	4.40
Bessemer,Ala. T2	4.15
Buffalo R2	4.15
Clairton,Pa. U5	4.15
Canton,O. R2	4.15
Cleveland R2	4.15
Detroit R7	4.30
Ecorse,Mich. G5	4.50
Emeryville,Calif. J7	4.90
Fairfield,Ala. T2	4.15
Fontana,Calif. K1	4.85
Gary,Ind. U5	4.15
Houston S5	4.65
Ind Harbor,Ind. 1-2, Y1	4.15
Johnstown,Pa. B2	4.15
KansasCity,Mo. S5	4.85
Lackawanna,N.Y. B2	4.15
LosAngeles B3	4.85
Milton,Pa. B6	4.55
Minnequa,Colo. C10	4.60
Niles,Calif. P1	4.85
N.Tonawanda,N.Y B11	4.15
Pittsburg,Calif. C11	4.85
Pittsburgh J5	4.15
Portland,Oreg. O4	4.90
Seattle B3, N14	4.90
So.Chicago R2, U5, W14	4.15
So.Duquesne,Pa. U5	4.15
So.SanFran.,Calif. B3	4.90
Sterling,Ill. (1) N15	4.15
Struthers,O. Y1	4.15
Torrance,Calif. C11	4.85
Weirton,W.Va. W6	4.30
Youngstown R2, U5	4.15

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2	4.875
Buffalo R2	4.875
Canton,O. T7	5.02
Canton,O. R2	4.875
Clairton,Pa. U5	4.875
Detroit R7	5.025
Ecorse,Mich. G5	5.225
Fontana,Calif. K1	5.925
Gary,Ind. U5	4.875
Houston S5	5.375
Ind.Harbor,Ind. I-2, Y1	4.875
Johnstown,Pa. B2	4.875
KansasCity,Mo. S5	5.575
Lackawanna,N.Y. B2	4.875
LosAngeles B3	5.925
Massillon,O. R2	4.875
Midland,Pa. C18	4.875
So.Chicago R2, U5,W14	4.875
So.Duquesne,Pa. U5	4.875
Struthers,O. Y1	4.875
Warren,O. C17	4.875
Youngstown U5	4.875

BARS & SMALL SHAPES, H.R.

High-Strength Low-Alloy

Aliquippa,Pa. J5	6.225
Bessemer,Ala. T2	6.225
Bethlehem,Pa. B2	6.225
Clairton,Pa. U5	6.225
Ecorse,Mich. G5	6.875
Fairfield,Ala. T2	6.225
Fontana,Calif. K1	7.475
Gary,Ind. U5	6.225
Ind.Harb.,Ind. I-2	6.225
Ind.Harb.,Ind. Y1	6.725
Johnstown,Pa. B2	6.225
Lackawanna,N.Y. B2	6.225
LosAngeles B3	6.925
Pittsburgh J5	6.225
Seattle B3	6.975
So.Chicago W14	6.225
So.Duquesne,Pa. U5	6.225
So.SanFrancisco B3	6.975
Struthers,O. Y1	6.725
Youngstown U5	6.225

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2	4.35

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5	4.15
Atlanta A11	4.40
Niles,Calif. P1	4.85
SanFrancisco S7	5.10

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5	5.00
Fontana,Calif. K1	6.00
Gary,Ind. U5	5.00
Houston S5	5.70
KansasCity S5	5.90
Youngstown U5	5.00

BARS, Cold-Finished Carbon

Ambridge,Pa. W18	5.20
BeaverFalls,Pa. M12, R2	5.20
Buffalo B5	5.25
Camden,N.J. P13	5.65
Caranegie,Pa. C12	5.20
Chicago W18	5.20
Cleveland A7, C20	5.20
Detroit P17, R7	5.35
Detroit B5	5.40
Donora,Pa. A7	5.20
Elyria,O. W8	5.20
FranklinPark,Ill. N5	5.20
Gary,Ind. R2	5.20
GreenBay,Wis. F7	5.185
Hammond,Ind. L2, M13	5.20
Hartford,Conn. R2	5.75
Harvey,Ill. B5	5.20
LosAngeles R2	6.65
Mansfield,Mass. B5	5.75
Massillon,O. R2, R8	5.20
Monaca,Pa. S17	5.20
Newark,N.J. W18	5.65
NewCastle,Pa. (17) B4	5.20
Pittsburgh J5	5.20
Plymouth,Mich. P5	5.45
Putnam,Conn. W18	5.75
Readville,Mass. C14	5.75
St.Louis,Mo. M5	5.50
So.Chicago,Ill. W14	5.20
SpringCity,Pa. K3	5.65
Struthers,O. Y1	5.20
Waukegan,Ill. A7	5.20
Worcester,Mass. W19	6.10
Youngstown F3, Y1	5.20

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md. (5) C19	4.45

BARS, Cold-Finished Alloy

Ambridge,Pa. W18	6.325
Beaver Falls,Pa. M12	6.325
Bethlehem,Pa. B2	6.325
Buffalo B5	6.325
Camden,N.J. P13	6.50
Canton,O. R2	6.325
Canton,O. T7	6.29
Carnegie,Pa. C12	6.00
Chicago W18	6.325
Cleveland A7, C20	6.325
Detroit P17, R7	6.475
Detroit B5	6.525
Donora,Pa. A7	6.325
Elyria,O. W8	6.325
Gary,Ind. R2	6.325
Hammond,Ind. L2, M13	6.325
Hartford,Conn. R2	6.775
Harvey,Ill. B5	6.325
Lackawanna,N.Y. B2	6.325
Mansfield,Mass. B5	6.775
Massillon,O. R2, R8	6.325
Midland,Pa. C18	6.325
Monaca,Pa. S17	6.325
Newark,N.J. W18	6.65
Plymouth,Mich. P5	6.525
So.Chicago,Ill. R2, W14	6.325
SpringCity,Pa. K3	6.475
Struthers,O. Y1	6.325
Warren,O. C17	6.325
Waukegan,Ill. A7	6.325
Worcester,Mass. A7	6.625
Youngstown F3, Y1	6.325

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2	4.15
Atlanta A11	4.40
Buffalo R2	4.15
Cleveland R2	4.15
Emeryville,Calif. J7	4.90
Fairfield,Ala. T2	4.15
Fontana,Calif. K1	4.85
Gary,Ind. U5	4.15
Houston S5	4.65
Ind.Harbor,Ind. 1-2, Y1	4.15
Johnstown,Pa. B2	4.15
KansasCity,Mo. S5	4.85
Lackawanna,N.Y. B2	4.15
LosAngeles B3	4.85
Milton,Pa. B6	4.55
Minnequa,Colo. C10	4.75
Niles,Calif. P1	4.85
Pittsburg,Calif. C11	4.85
Pittsburgh J5	4.15
SandSprings,Okla. S5	5.05
Seattle B3, N14	4.90
So.Chicago,Ill. R2	4.15
So.Duquesne,Pa. U5	4.15
So.SanFrancisco B3	4.90
SparrowsPoint,Md. B2	4.15
Sterling,Ill. (1) N15	4.15
Struthers,O. Y1	4.15
Torrance,Calif. C11	4.85
Youngstown R2, U5	4.15

BARS, Reinforcing (Fabricated; to consumers)

Johnstown, ¼-1" B2	5.55
KansasCity S5	6.35
LosAngeles B3	6.18
Marion,O. P11	5.55
Seattle N14	5.80
Seattle B3	6.25
So.SanFrancisco B3	6.25
SparrowsPt. ½-1" B2	5.55
Williamsport,Pa. S19	5.45

RAIL STEEL BARS

Avis,Pa.(4) J8	4.75
ChicagoHts.(3) C2	4.50
ChicagoHts.(4) C2	4.75
ChicagoHts.(3,4) I-2	4.50
Franklin,Pa.(3) F5	4.50
Franklin,Pa.(4) F5	4.75
FortWorth,Tex.(26) T4	4.65
Marion,O.(3) P11	4.50
Moline,Ill.(3) R2	*4.50*
Tonawanda(3,4) B12	5.00
Williamsport(3) S19	5.25
Williamsport,Pa.(4) S19	5.45

BARS, Wrought Iron

Economy,Pa.(S.R.) B14	10.40
Economy,Pa.(D.R.) B14	12.90
Economy(Staybolt) B14	13.20
McK.Rks.(Staybolt) L5	15.50
McK.Rks.(S.R.) L5	10.40
McK.Rks.(D.R.) L5	14.00

—SHEETS—

SHEETS, Hot-Rolled Steel (18 gage and heavier)

AlabamaCity,Ala. R2	3.925
Ashland,Ky.(8) A10	3.925
Butler,Pa. A10	3.925
Cleveland J5, R2	3.925
Conshohocken,Pa. A3	4.325
Detroit M1	4.40
Ecorse,Mich. G5	4.125
Fairfield,Ala. T2	3.925
Fairless,Pa. U5	4.025
Fontana,Calif. K1	4.70
Gary,Ind. U5	3.925
Geneva,Utah C11	4.025
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	3.925
Irvin,Pa. U5	3.925
Lackawanna,N.Y. B2	3.925
Munhall,Pa. U5	3.925

Niles,O. N12 ....5.425
Pittsburg,Calif. C11 ..4.625
Pittsburgh J5 ....3.925
Riverdale,Ill. A1 ......3.925
Sharon, Pa. S3 ....4.225
So.Chicago,Ill. W14 ...3.925
SparrowsPoint,Md. B2..3.925
Steubenville,O. W10 ..3.925
Torrance, Calif. C11 ..4.625
Warren,O. R2 ....3.925
Weirton,W.Va. W6 ...3.925
Youngstown U5, Y1 ...3.925

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2 ..5.225
Dover,O. R1 ....5.975
Mansfield,O. E6 ....5.80
Niles,O. N12 ....5.20
Torrance,Calif. C11 ...5.875

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy

Cleveland J5, R2 ......5.90
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 ......6.375
Fairfield,Ala. T2 ......5.90
Fontana,Calif K1 ......7.00
Gary,Ind. U5 ....5.90
Ind.Harbor,Ind. I-2 ....5.90
Ind.Harbor,Ind. Y1 ....6.40
Irvin,Pa. U5 ....5.90
Lackawanna(35) B2 ...5.90
Munhall,Pa. U5 ....5.90
Pittsburgh J5 ....5.90
Sharon,Pa. S3 ....5.90
So.Chicago,Ill. U5 ....5.90
SparrowsPoint(38) B2 .5.90
Warren,O. R2 ....5.90
Weirton,W.Va. W6 ....6.175
Youngstown U5 ....5.90
Youngstown Y1 ....6.40

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)

Ashland,Ky.(8) A10 ..4.175
Cleveland R2 ....4.525
Ind.Harbor,Ind. I-2 ..4-175
Warren,O. R2 ....4.525

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Butler,Pa. A10 ....4.775
Cleveland J5, R2 ......4.775
Ecorse,Mich. G5 ......4.975
Fairfield,Ala. T2 .....4.775
Fairless,Pa. U5 ....4.875
Follansbee,W.Va. F4 ..5.775
Fontana,Calif. K1 ....5.875
Gary,Ind. U5 ....4.775
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2, Y1 4.775
Irvin,Pa. U5 ....4.775
Lackawanna,N.Y. B2 ..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ..5.725
Pittsburgh J5 ....4.775
SparrowsPoint,Md. B2..4.775
Steubenville,O. W10 ...4.775
Warren,O. R2 ....4.775
Weirton,W.Va. W6 ...4.775
Youngstown Y1 ....4.775

SHEETS, Cold Rolled
High-Strength Low-Alloy

Cleveland J5, R2 ......7.225
Ecorse,Mich. G5 ....7.675
Fontana,Calif. K1 .....8.275
Gary,Ind. U5 ....7.225
IndianaHarbor,Ind. Y1 .7.725
Irvin,Pa. U5 ....7.225
Lackawanna(37) B2 ...7.225
Pittsburgh J5 ....7.225
SparrowsPoint (38) B2 7.225
Warren,O R2 ....7.225
Weirton,W.Va. W6 ...7.475
Youngstown Y1 ....7.725

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 ....5.275
Cleveland R2 ....5.375
Middletown,O. A10 ....5.275
Warren,O. R2 ....5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2 .5.275
Ashland,Ky (8) A10 ..5.275
Canton,O. R2 ....5.275
Dover,O. R1 ....5.675
Fairfield,Ala. T2 ....5.275†
Gary,Ind. U5 ....5.275†
GraniteCity,Ill. G4 ....5.475
Ind.Harbor,Ind. I-2 ..5.325
Irvin,Pa. U5 ....5.275†
Kokomo,Ind.(13) C16 ..5.375
MartinsFerry,O. W10 ..5.275
Niles,O. N12 ....5.80
Pittsburg,Calif. C11 ..6.025†
Sharon,Pa. S3 ....5.45
SparrowsPoint,Md. B2 5.275
Steubenville,O. W10 ..5.275
Torrance,Calif. C11 ..6.275†
Weirton,W.Va. W6 ....5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10,
High-Strength Low-Alloy

Irvin,Pa. U5 ....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron
No. 10 flat

Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 ....6.025

SHEETS, Culvert	**Cu Alloy**	**Cu Fe**
Ashland,Ky. A10	6.325	....
Canton,O. R2 ...	6.475	6.925
Fairfield T2 ...	6.075	6.325
Gary,Ind. U5 ..	6.075	6.325
Ind.Harbor I-2	6.075	6.325
Irvin,Pa. U5 ...	6.075	6.325
Kokomo,Ind. C16	6.525	....
MartinsFry.,O W10	6.075	....
Pitts'Cal C11 ..	6.825	....
SparrowsPt. B2	6.075	....
Torrance,Calif C11	6.825	....

SHEETS, Culvert Pure Iron

Ashland,Ky. A10 .....6.575
Fairfield,Ala. T2 ......6.325
MartinsFerry,O. W10 ..6.325

SHEETS, Galvannealed Steel

Canton,O. R2 ....5.825
Irvin,Pa. U5 ....5.825†
Kokomo,Ind (13) C16 ..5.925
Niles,O. N12 ....6.35

†Based on 5c zinc.

SHEETS, ZINCGRIP Steel

Butler,Pa. A10 ....5.525
Middletown,O. A10 ...5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 ....5.775
Middletown,O. A10 ....5.775

SHEETS, Electro Galvanized

Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED

Butler,Pa. A10 ....8.625

SHEETS, Enameling Iron

Ashland,Ky (8) A10 ...5.175
Cleveland R2 ....5.175
Gary,Ind. U5 ....5.175
GraniteCity,Ill. G4 ...5.875
Ind.Harbor,Ind. I-2 ..5.175
Irvin,Pa. U5 ....6.175
Middletown,O. A10 ....5.175
Youngstown Y1 ....5.175

BLUED STOCK, 29 ga.

Yorkville,O. W10 ......7.20
Follansbee,W.Va. F4 ..7.30
Follansbee (23) F4 ..7.175

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBott'm,W.Va.W10 5.675
Gary,Ind. U5 ....5.675
Mansfield,O. E6 ....6.25
Middletown,O. A10 ....5.675
Niles,O. N12 ....6.00
Weirton,W.Va. W6 ....5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A19 ....6.075

SHEETS, Well Casing

Fontana,Calif. K1 ......6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..3.925
Alton,Ill. L1 ....4.20
Ashland,Ky (8) A10 ...3.925
Atlanta A11 ....4.175
Bessemer,Ala. T2 ....3.925
Bridgeport,Con.(10)S15 4.425
Buffalo (27) R2 .....3.925
Butler,Pa.(8) A10 ...3.925
Carnegie,Pa. S18 ....4.425
Conshohocken,Pa. A3 .4.325
Detroit M1 ....4.40
Ecorse,Mich. G5 .....4.225
Fairfield Ala. T2 ......3.925
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 ....3.925
Houston,Tex. S5 .....4.425
Ind.Harbor,Ind. I-2,Y1 3.925
Johnstown,Pa.(25) B2 .3.925
KansasCity,Mo.(9) S5 .4.625
Lackw'na,N.Y.(32) B2 3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. B6 ....4.35
Minnequa,Colo. C10 ...5.025
NewBritain(10) S15 ...4.425
N.Tonawanda,N.Y. B11 3.925
Pittsburg,Calif. C11 ...4.675
Riverdale,Ill. A1 ......3.925
SanFrancisco S7 ....5.10
Seattle(25) B3 ....4.925
Seattle N14 ....4.925
Sharon,Pa. S3 ....4.225
So.Chicago,Ill. W14 ...3.925
So.SanFrancisco(25)B3 4.675
SparrowsPoint,Md. B2 3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 ....3.925
Weirton,W.Va. W6 ....4.025
Youngstown Y1, U5 ...3.925

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 ......6.45
Fontana,Calif. K1 .....7.80
Gary,Ind. U5 ....6.40
Houston,Tex. S5 ....6.90
KansasCity,Mo. S5 ....7.10
LosAngeles B3 ....7.60
NewBritn.,Conn.(10)S15 6.45
Sharon,Pa. S3 ....6.45
So.Chicago W14 ....6.40
Youngstown U5 ....6.40

STRIP, Hot-Rolled
High-Strength Low-Alloy

Bessemer,Ala. T2 ....5.65
Conshohocken,Pa. A3 ..6.20
Ecorse,Mich. G5 ......6.50
Fairfield,Ala. T2 ....5.65
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 ....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.40
Seattle(25) B3 ....6.65
Sharon,Pa. S3 ....5.95
So.SanFrancisco(25)B3 .6.40
SparrowsPoint,Md. B2 ..6.00
Warren,O. R2 ....5.95
Weirton,W.Va. W6 ....6.30
Youngstown Y1 ....6.45
Youngstown U5 ....5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.175
Warren,O. R2 ....4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ......5.80
Bridgeprt,Conn.(10) S15 6.15
Butler,Pa. A10 ....5.45
Cleveland A7, J5 ......5.45
Dearborn,Mich. D3 ....6.05
Detroit D2 ....5.95
Detroit M1 ....5.45
Dover,O. G6 ....5.80
Ecorse,Mich. G5 ....5.65
Follansbee,W.Va. F4 ...5.45
Fontana,Calif. K1 ......7.35
FranklinPark,Ill.(40), T6 5.70
Ind.Harbor,Ind. I-2 ...5.70
Lackawanna,N.Y. B2 ...5.45
LosAngeles C1 ....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.45
NewBritain(10) S15 ....6.15
NewCastle,Pa.(14), B4 ..5.45
NewCastle,Pa. E5 ....5.95
NewHaven,Conn. A7 ...5.95
NewHaven,Conn. D2 ...6.20
Pawtucket,R.I. R3 ....6.80
Pawtucket,R.I.(21) N8..6.65
Riverdale,Ill. (40) A1 ..5.70
Rome,N.Y.(29) R6 .....5.45
Sharon,Pa. S3 ....5.80
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 ....7.00
Wall'ford,Conn. W2(50) 6.40
Warren,O.(40), T5 .....5.95
Warren,O. R2 ....5.45
Weirton,W.Va. W6 .....5.45
Worcester,Mass. W19...7.05
Youngstown C8 ....5.95
Youngstowr Y1 ....5.45

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 ......12.00
Cleveland A7 ....12.00
Dover,O. G6 ....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 ....12.00
Worcester,Mass. A7 ..12.30
Youngstown C8 ....12.00

STRIP, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5 ....7.80
Cleveland A7 ....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 ....8.00
Ecorse,Mich. G5 ......8.50
Lackawanna,N.Y. B2 ..8.15
Sharon,Pa. S3 ....7.65
SparrowsPoint,Md. 8.15
Warren,O. R2 ....7.60
Weirton,W.Va. W6 ....8.30
Youngstown Y1 ....8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ....6.05

STRIP, Electro Galvanized

Dover,O. G6 ....5.70
Warren,O. T5 ....5.70
Weirton,W.Va. W6 ....5.45
Youngstown C8 ....5.95

TIGHT COOPERAGE HOOP

Atlanta A11 ....4.65
Riverdale,Ill. A1 ......4.50
Sharon,Pa. S3 ....4.55
Youngstown U5 ....4.35

Key to Producers

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American Cladmetals Co.
B1	Babcock & Wilcox Co.
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B6	Boiardi Steel Corp.
B8	Braeburn Alloy Steel
B11	Buffalo Bolt Co.
B12	Buffalo Steel Div. H. K. Porter Co.
B14	A. M. Byers Co.
B15	J. Bishop & Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div., Borg-Warner Corp.
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve. Cold Rolling Mills
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia-Geneva Steel
C12	Columbia Steel & Shaft.
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft.
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
C22	Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23	Charter Wire Products
C24	G. O. Carlson Inc.
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Sons, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
D8	Damascus Tube Co.
D9	Wilbur D. Driver Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Inc.
F3	Fitzsimons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div., Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
F8	Ft. Wayne Metals Co.
G2	Globe Iron Co.
G4	Granite City Steel Co.
G5	Great Lake Steel Corp.
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
H7	Helical Tube Co.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div., Borg-Warner Corp.
I-7	Indiana Steel & Wire Co.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro-Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
K7	Kenmore Metals Corp.
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Steel Co.
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.
M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M5	Medart Co.
M6	Mercer Tube & Mfg. Co.
M8	Mid-States Steel & Wire
M12	Moltrup Steel Products
M13	Monarch Steel Co.
M16	Md. Fine & Special Wire
M17	Metal Forming Corp.
N2	National Supply Co.
N3	National Tube Div.
N5	Nelsen Steel & Wire Co.
N6	NewEng.HighCarb Wire
N8	Newman-Crosby Steel
N9	Newport Steel Corp.
N12	Niles Rolling Mill Div.
N14	Nrthwst Steel Roll. Mills
N15	Northwestern S.&W.Co.
N16	New Delphos Mfg. Co.
O3	Oliver Iron & Steel Corp.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P4	Phoenix Iron & Steel Co.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke & Chem.
P7	Pittsburgh Steel Co.
P11	Pollak Steel Co.
P12	Portsmouth Division Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts. Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Co.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R7	Rotary Electric Steel Co.
R8	RelianceDiv.,EatonMfg.
R9	Rome Mfg. Co.
S1	Seneca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S4	Sharon Tube Co.
S5	Sheffield Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S16	Struthers Iron & Steel
S17	Superior Drawn Steel Co.
S18	Superior Steel Corp.
S19	Sweet's Steel Co.
S20	Southern States Steel
S23	StainlessWeldedProducts
S26	Specialty Wire Co. Inc.
T2	Tenn. Coal & Iron Div.
T3	Tenn. Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Strip Division, Pittsburgh Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div., Am. Rad. & Stan. San.
T13	Tube Methods Inc.
U4	Universal-Cyclops Steel
U5	United States Steel Corp.
U6	U. S. Pipe & Foundry
V2	Vanadium-Alloys Steel
V3	Vulcan Crucible Steel Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W7	W. Va. Steel & Mfg. Co.
W8	West Auto Mach Screw
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div.,Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div., International Harvester
W15	Woodward Iron Co.
W18	Wyckoff Steel Co.
W19	Worcester Pressed Steel
Y1	Youngstown Sheet&Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	....
Carnegie,Pa. S18	...	8.00	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearbon,Mich. D3	6.05	8.25	8.85	....	....
Detroit D2	6.45	7.85	8.45	10.55	....
Dover,O. G6	6.05	8.00	8.60	10.55	12.85
FranklinPark,Ill. T6	5.80	7.80	8.75	10.70	....
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn., Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
NewCastle,Pa. B4	5.80	8.00	8.60	....	....
NewCastle,Pa. E5	5.95	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	6.70	7.95	8.55	10.50	....
NewYork W3	...	8.30	8.90	10.85	13.15
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	8.00	8.60	10.56	12.85
Worcester,Mass.,Base	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	...	8.00	8.60	10.55	12.85
Trenton,N.J. R5	...	8.30	8.90	10.85	13.15
Wallingford,Conn. W2	6.65	7.95	8.90	10.85	13.15
Warren,O. T5	6.20	8.00	8.60	10.55	12.85
Weirton,W.Va. W6	5.80	8.00	8.60	10.55	12.85
Worcester,Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.50	15.00	....
FranklinPark,Ill. T6	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (cut lengths ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A4	...	...	8.85	10.10	10.90
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	..
Mansfield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	7.55	7.85	8.35	...	...
Vandergrift,Pa. U5	...	8.35	8.85	10.10	10.90
Warren,O. R2	8.05	8.35	8.85	10.10	10.90
Zanesville,O. A10	...	8.35	8.85	10.10	10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A4	11.45	....	....	....
Newport,Ky. N9 (cut lengths)	10.95	....	....	....
Vandergrift,Pa. U5	11.45	12.00	12.70	13.50
Warren,O. R2	11.45	....	....	....
Zanesville,O. A10	11.45	12.00	12.70	13.50

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	16.05	16.55
Vandegrift, Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.55

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Atlanta A11	5.775
Alton,Ill. L1	5.75
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.725
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Torrance,Calif. C11	6.475
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.15
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
Milbury (12) N6	8.725
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.95
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Roebling,N.J. R5	7.225
Portsmouth,O. P12	6.925
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.85
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.875
Monessen,Pa. P7	6.625
Monessen,Pa. P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So. Chicago,Ill. R2	6.625
So. SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Torrance,Calif. C11	7.575
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8"Coils)	
Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawf'sville,Ind. M8	10.55
Fostoria,O. S1	10.55
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7,T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Johnstown,Pa. B2	9.50
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind I-7	9.55
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.00
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Craf'sville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
FranklinPark,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P16	8.00
Monessen,Pa. P7	7.45
Pawtkt.R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6 W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	6.675	7.075
Aliquippa J5	6.675	7.20*
Atlanta A11	6.925	7.475
Bartonville(19)K4	6.675	7.225
Buffalo W12	6.675	7.075
Cleveland A7	6.675	....
CrawfordsvilleM8	6.775	7.325
Donora,Pa. A7	6.675	7.075†
Duluth,Minn. A7	6.675	7.075†
Fairfield T2	6.675	7.075†
Houston,Tex. S5	7.075	7.475
JohnstownB2(48)	6.675	7.225
Joliet,Ill. A7	6.675	7.075†
KansasCity,Mo.S5	7.275	7.675
Kokomo C16	6.775	7.175
LosAngeles B3	7.625	....
Minnequa C10	6.925	7.325**
Monessen P7(48)	6.675	7.225
Palmer W12	6.975	7.375
Pitts.Calif. C11	7.625	8.025†
Prtsmth (18)P12	6.575	....
Rankin A7	6.675	7.075†
So.Chicago R2	6.075	6.325
So.S.Frn.(48) C10	7.625	8.025**
Spar'wsPt. B2(48)	6.775	7.325
Sterl'g(1)(48)N15	6.675	7.225
Struthers,O. Y1	6.675	7.175
Worcester A7	6.975	....

*Based on 10c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Stone	Galv. Stone
Aliquippa J5	10.63	12.72*
Bartonville(19)K4	10.73	12.51
Cleveland A7	12.50	....
Crawfordville M8	12.50	14.35
Fostoria O. S1	12.60	14.15
Johnstown B2	12.50	14.35
Kokomo C16	12.60	14.15
Min'qua C10	12.75	14.45**
Palmer,Mass.W12	12.50	14.05
Pitts.Calif. C11	12.85	14.40†
SparrowsPt. B2	12.60	14.45
Sterling(1) N15	10.73	12.15
Waukegan A7	12.50	14.05†
Worcester A7	12.80	....

*Based on 11c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE, Barbed	Col.
AlabamaCity,Ala. R2	153
Aliquippa J5	150*
Atlanta A11	159
Bartonville,Ill.(19) K4	156
Crawfordsville,Ind. M8	159
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156
Joliet,Ill. A7	153
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153
S.SanFrancisco C10	173**
SparrowsPoint,Md. B2	158
Sterling,Ill.(1) N15	156

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga.	Col.
AlabamaCity,Ala. R2	140
Ala.City,Ala.17 ga. R2	235
Ala.City,Ala.18 ga. R2	245
Aliqp'pa,Pa.9-14½ga.J5	143*
Atlanta A11	146
Bartonville,Ill.(19) K4	143
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17ga.,6" B2	234
Johnstown, 4"	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	148**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140
Sterling,Ill. (1) N15	143

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	152
Bartonville,Ill.(19) K4	149
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg) to dealers (33)	
Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	133
Atlanta A11	136
Bartonville,Ill. (19) K4	133
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Portsmouth,O. P12	132
Rankin,Pa. A7	133
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	143
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	18.25	...	22.25	...	24.75	...	26.25	...	26.25	...	26.00	...	28.50	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.50	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.50	22.25	5.00	23.75	6.50	23.75	6.50	23.00	5.75	25.50	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (††)	15.75	list	19.75	2.5	22.25	5.0	23.75	6.5	23.75	6.5	23.0	5.75	25.5	8.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv.
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	....	...	....	....	23.25	7	26.25	11	28.75	14.5	31.25	15.5	31.75	16.5
Benwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	..	....	..	....	...	....	...	....	...
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.5	28.75	9.5	31.75	13.5	34.25	17	36.75	18.75	37.25	19.75
Fontana, Calif. K1 (††)	...	...	....	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	....	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	....	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (†)	26.5	—0.25	19.5	+4.25	12.5	+8.5	....	..	....	..	....	...	....	...	....	...
Sharon, Pa. M6	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown R2 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Youngstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.50	34.25	18.50	34.75	19.50

Size—Inches	2		2½		3		3½		4	
List Per Ft.	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
Alton, Ill. L1 (§)	32.25	17	33.75	17	33.75	17	....	....	....	....
Benwood, W.Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
Etna, Pa. N2 (†)	37.75	20.25	39.25	21	39.25	21	30.25	11.5	30.25	11.5
Fontana, Calif. K1 (††)	22.25	7	23.75	7	23.75	7	....	....	....	....
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
Sharon, Pa. M6	35.25	20	36.75	20	36.75	20	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 11.00c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	13	23.12	27.89	20.01
1¾	13	26.84	32.37	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2¼	12	37.10	44.75	32.41
2½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS

	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer, Pa. U5	4.325	4.225	4.275	5.20
Ensley, Ala. T2	4.325	4.225	....	5.20
Fairfield, Ala. T2	....	....	....	5.20
Gary, Ind. U5	4.325	4.225	4.275	...
Huntington, W.Va. W7	....	....	....	5.20
IndianaHarbor, Ind. I-2	4.325	4.225	4.275	...
Johnstown, Pa. B2	....	....	...(16)	5.20
Lackawanna, N.Y. B2	4.325	4.225	....	5.20
Minnequa, Colo. C10	4.325	4.125	....	5.70
Steelton, Pa. B2	4.325	4.225	....	...
Williamsport, Pa. S19	....	....	....	5.20

TIE PLATES

Fairfield, Ala. T2	5.125
Gary, Ind. U5	5.125
Ind. Harbor, Ind I-2	5.125
Lackawanna, N.Y. B2	5.125
Minnequa, Colo. C10	5.125
Pittsburg, Calif. C11	5.275
Seattle B3	5.275
Steelton, Pa. B2	5.125
Torrance, Calif. C11	5.275

TRACK BOLTS (20) Treated

KansasCity, Mo. S5	11.00
Lebanon, Pa. (31) B2	10.75
Minnequa, Colo. C10	11.00
Pittsburgh O3, P14	11.00

JOINT BARS

Bessemer, Pa. U5	5.275
Fairfield, Ala. T2	5.275
Ind. Harbor, Ind. I-2	5.275
Joliet, Ill. U5	5.275
Lackawanna, N.Y. B2	5.275
Minnequa, Colo. C10	5.275
Steelton, Pa. B2	5.275

AXLES

Ind. Harbor, Ind. S13	6.50
Johnstown, Pa. B2	6.50

STANDARD TRACK SPIKES

Ind. Harbor, Ind. I-2, Y1	7.05
KansasCity, Mo. S5	7.30
Lebanon, Pa. B2	7.05
Minnequa, Colo. C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So. Chicago, Ill. R2	7.05
Struthers, O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger	8.90c
7/16-in. under	26.5 off

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in & smaller diam.	4
9/16-in. & ⅝-in.	5
¾-in. and larger	3
Longer than 6 in.:	
All diams.	+4
Lag bolts, all diams.:	
6 in. and shorter	12
over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoe	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. & C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex, regular heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" and smaller	40
⅞" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smalled diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+ % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots	51.00-60.00
Copper:	
Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots	17.50-25.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* Plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(48) 6.7 gage.
(49) U-post; add 2 cols. for T post.
(50) 0.025 gage; 6.55c for 0.026 to 0.068 gage; 6.65c for 0.069 gage and over.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B ...	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
305	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S ...	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F ...	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431 ..	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	....	....
410	22.90	30.10	....	....
430	22.90	30.10	....	....
Inconel ..	41.23	54.18	....	165.00
Nickel ..	37.50	50.90	....	....
Monel ...	38.90	51.80	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base, Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

* Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon .	0.25-.285	5% Cr Hot Work....	0.39
Extra Carbon ..	0.33-.340	W-Cr Hot Work	0.41
Special Carbon ..	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening ...	0.370-.39	Hi-Carbon-Cr. ..	0.665-.70

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.055
18.25	4.25	1	4.75	...	2.340
18	4	2	9	...	2.565-2.695
18	4	2	..	...	1.820
18	4	1	...	...	1.580-1.660
13.5	4	3	...	...	1.875
6.4	4.5	1.9	...	5	1.065
6	4	3	...	6	1.300
2	1.4	1.2	...	...	0.495
1.5	4	1	...	8.5	0.895

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$58.00	$58.50	$59.00	$59.50
New York, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Philadelphia, del.	60.75	61.25	61.75	62.25
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	....	....
Cincinnati, del.	....	60.43	....	...
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	...
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No. Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	..	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	...	62.80	62.80	...
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	...
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	57.37	57.87	57.87	...
McKeesRocks, del.	57.04	57.54	57.54	...
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	...
Verona, Trafford, del.	58.19	58.69	58.69	...
Brackenridge, del.	58.45	58.95	58.95	...
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....		57.00
Midland,Pa. C18	56.00	....		....
Monessen,Pa. P7	56.00	....		....
Youngstown District				
Hubbard,O. Y1		....	56.50	....
Youngstown Y1		....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	....	63.25	63.75	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	57.50	58.00	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	58.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	60.00	60.50	61.00	61.50
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....
Troy,N.Y. R2	58.00	58.50	59.00	....

*Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	95.50
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee,Wash., OH & Fdry, freight allowed K2	95.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$61.00
Rockwood,Tenn. T3	68.50
Steelton,Pa. B2	64.00
Philadelphia, delivered	67.56
Troy,N.Y. R2	64.00

Hydraulic Presses

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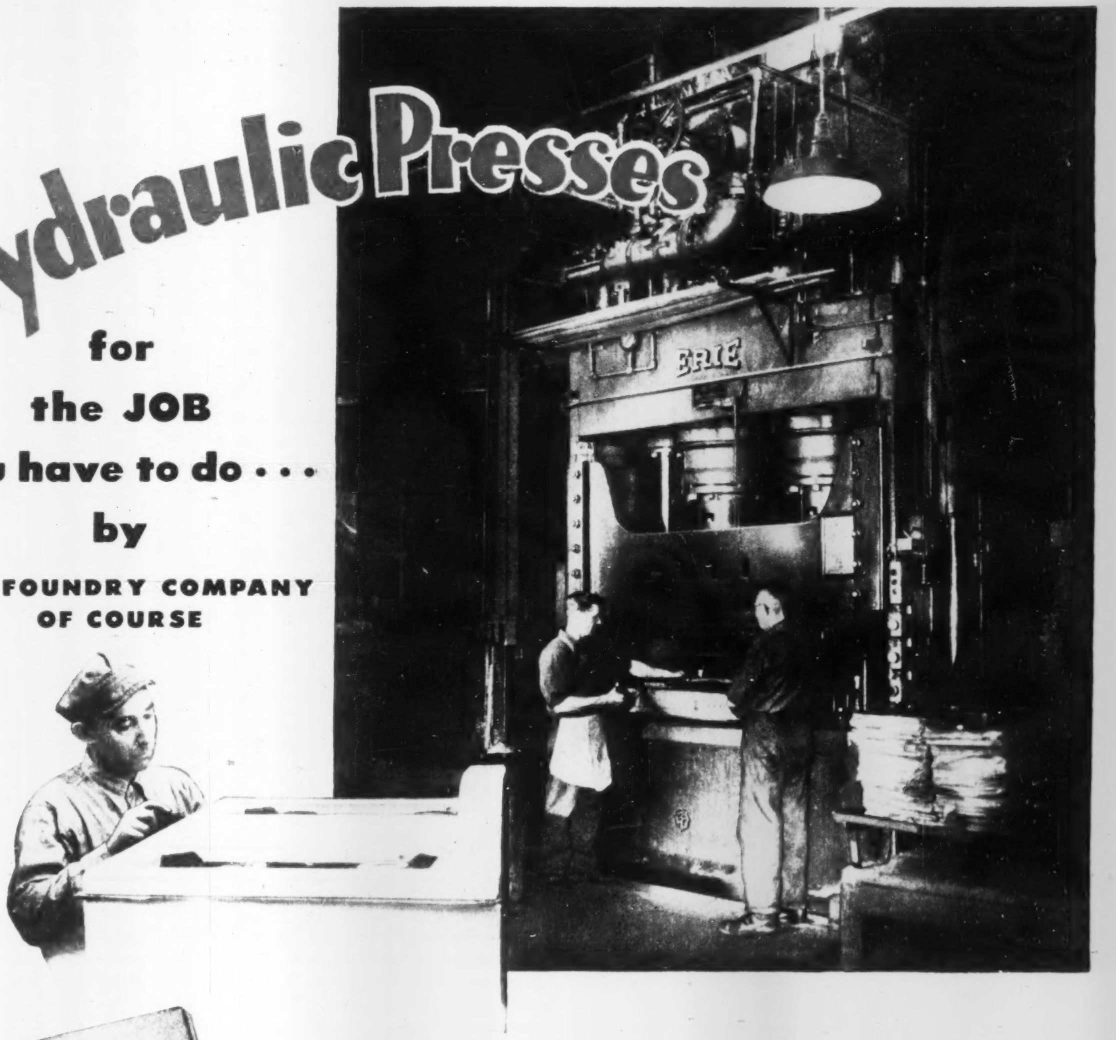

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DETROIT	CHICAGO	INDIANAPOLIS	NEW ENGLAND
335 Curtis Building	13 South Austin Blvd.	2302 N. Meridian Street	G. V. Eads, Kent, Conn.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.20	7.64	7.81	7.00	...	6.86	8.17[6]	12.04	6.98	6.85	7.98
Birmingham	6.10	7.00	8.00[2]	6.30	...	6.15	8.90	....	6.35	6.35	8.65
Boston	6.89	7.83	9.23	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	9.01	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.05	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.47	6.72	...	6.58	7.66	12.17	6.93	6.85	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.38	7.31	8.34	6.71	7.36	6.56	7.60	11.92	6.93	6.85	7.80
Houston	7.15	7.85	9.32	7.45	...	7.45	....	....	7.35	7.20	8.55
Jersey City, N. J.	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.22	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.40	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	9.02	7.16	...	7.06	8.43[6]	....	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.53	7.55	8.35	7.02	8.80	6.87	8.19[6]	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	7.90	9.30	10.00	7.90	...	7.60	10.90	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.35	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.71	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	8.70	10.10	8.02	...	7.58	10.13	13.50	7.50	7.59	9.40
Spokane	8.15	9.25[7]	10.10	8.50	...	7.60	11.00[8]	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed; ** ⅛" and heavier, 8.09c for No. 12 and lighter. Base quantities 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; Cold-finished bars, 2000 lb and over; [2]—500 to 9999 lb; [5]—1000 to 1999 lb; [6] 1000 lb and over; [7]—1500 lb to 3499; [8]—under ½ in.

Warehouses Order More Cautiously

Balance between supply and demand is attained in additional products. Distributors anticipate satisfactory volume of business in September and October

Boston Steel distributors already are short of straight chromium grades of stainless, but are not ordering replacements in volume with deliveries as near as October. Most of them are taking orders for 18-8 and other 300 series grades, gambling on decontrol of nickel or an easing on end-use restrictions.

Meanwhile, as stocks become better balanced, warehouses are ordering cautiously and to specifications. Alloy stocks are well rounded, as are carbon (except for larger rounds), heavy plates and flats, and wide-flanged beams.

Warehouses are rapidly becoming virtually fabricating shops; most have added new equipment for slitting, flame-cutting, friction saws and plate shears. A new plate shop, operated by Brown-Wales Co., Cambridge, Mass., has a heavy shear, flame cutting and other new equipment, making it possible for the firm to shape plates to a wide range of customers' requirements.

New York Warehouses are unable to move 18-8 stainless because of end-use restrictions; stocks are not heavy, but most are pushing straight chromium grades. With carbon steel products offered more freely, inventories are attaining better balance and distributors are less inclined to place forward orders. While currently cold-rolled sheets are in limited supply, notably in lighter gages, orders have been placed for correction of this shortage. Heavy flats and larger rounds are in short supply, but smaller bars are in ample supply. Alloy inventories are well balanced.

Detroit Within the last month many warehouses in the motor city report that their problem has shifted from one of supply to one of demand. Small carbon bars are now in easy supply with large carbon bars easing rapidly. Hot and cold-rolled sheet and strip now can be purchased readily in warehouse quantities as customers discover that mills can meet short delivery dates for their larger requirements.

One warehouseman summed it up this way: "With auto production falling and mills continuing at top output, shopping around for steel to fill orders is almost a thing of the past. Customers still come to us for small quantities, but the mills are taking care of the volume orders.

Chicago Warehouses in this area are experiencing good demand for steel products, but it is coming in the most orderly fashion of any time this year. The last few weeks have shown a pickup in business attributed to reopening of many manufacturing plants which had either closed or were on reduced schedules for vacations. Inventory building of fast-moving products still is impossible, but prospect for progress in this direction during late fourth quarter looks promising.

Philadelphia August warehouse business remained at about July levels and above year-ago marks when volume was hurt by the steel strike. Distributors look for good business in September and October, though somewhat below March-April levels. Stocks are now about 80 per cent of normal in gross tonnage. On a size basis, they are not more than 50 to 60 per cent of what should be carried. Mill orders currently are directed at filling up holes in stocks, which are spotty in sizes. Wide-flange beams, plates, large rounds and seamless mechanical tubing are scarcest products. Time of receipt on mill orders is now watched more closely.

Seattle Distributors expect expanded volume in September following the vacation period when many shops closed and demand dropped. Some imports of Japanese hot-rolled sheets are reported, but buyers are cautious because of difficulty in welding this material.

Freer Market Developing in Bars

Cold drawers note a steady improvement in availability of hot bars. Large rounds continue tight, but likely will ease in 60 days as military needs decline

Bar Prices, Page 170

New York — Substantially better supply is shown by bar rounds, bar size angles and bar shapes. Such is not the case for large bar rounds, though military take is dropping. Fourth-quarter or earlier delivery can be had on small bar sizes.

Warehouse prices are being shaded by importers of foreign bars, but not by domestic producers. To meet the competition, some warehouses are narrowing their margin of profit. Quality problems in foreign steel (getting a uniform cross-section) keep large bars from coming in in any substantial quantity.

Stainless bars can be delivered in 60 to 75 days, which nearly approximates mill lead time. Reinforcing bar fabricators feel the effects of New York's construction strike.

Boston Cold-finished carbon bar demand is easing. Nearly 90 per cent of consumption in this area is in sizes under 2-in. and, within that range, supply has caught up with requirements. Large rounds and heavy flats are still difficult to obtain. Business volume in alloys has slumped, but a wider range of specifications are available, with the exception of nickel alloys.

Consumption has not snapped back to presummer levels with numerous bar users. There are scattered cancellations of old overdue orders which act as a corrective inventory measure with most consumers. Converters are placing orders against hot-rolled allotments more conservatively and near the lead-time deadline each month.

Philadelphia Mills are pretty well booked-up on carbon bars for the entire fourth quarter. Some industry men see an easing in large rounds in 60 days with a change in the shell program. Seamless mechanical tubing is still hard to get because of the shortage of large rounds. Alloy bars and billets are still allocated, but consumers' inventories are in good shape.

Cold drawers report a noticeable improvement in the last month in hot bars, one being offered and turning down—an extra 200 tons of hot bars. Drawers' stocks are a bit over 60 per cent of normal now and are expected to be rounded out by the first quarter. Sales are picking up as vacations end. Distributors now are releasing December orders for cold-finished bars on which they had marked "hold." Small sized cold bars can be had for November delivery. Bar angles and flats also show less stringency.

Cincinnati Demand for carbon bars continues to hold up very well while stocks remain in poor shape. On the other hand, alloy bar distributors are getting what they need and are looking for business.

Chicago The easing trend continues in steel bars of the larger sizes. Small diameters have been readily available for some time. Declining demands of automotive and military shell requirements are the two most potent factors currently. Were farm implement manufacturing anywhere close to normal, bars still could be tight. It just happens that last spring, when barmakers were forced to cut customer quotas because demand exceeded supply, the cut which farm equipment makers were given was accepted by the latter with little protest because their requirements were declining. Since that time, their requirements have dropped further.

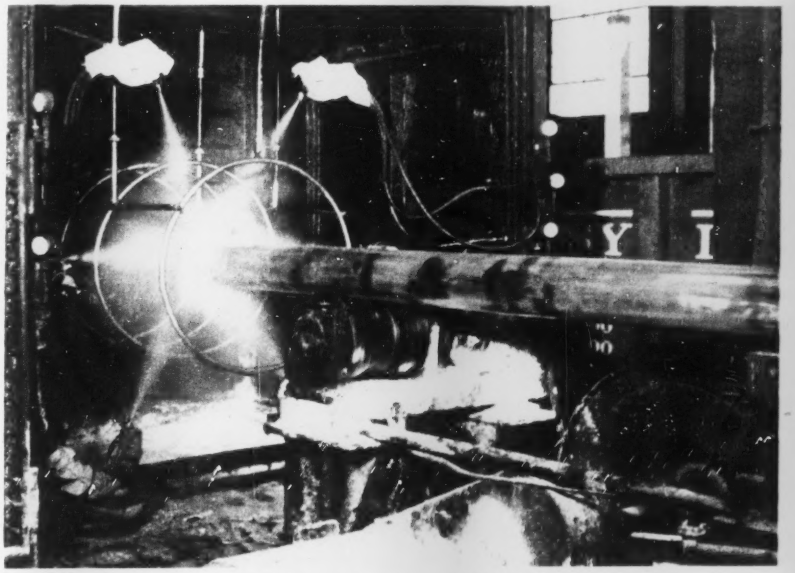
Pittsburgh Demand is brisk for high quality bars, and bars 1½-in. and larger in size. Smaller bars are now in good supply. Manufacturers here have openings for cold-finished bars in November.

Effects of mass vacations are still felt. Over-all demand is spotty—agricultural implement makers and railroads are not buying large tonnages now. The General Motors transmission plant fire disrupted production schedules in this area. As a result, some October and November orders are being postponed until December. Buyers are generally reluctant to place orders very far in advance.

Semifinished Steel . . .

Semifinished Prices, Page 170

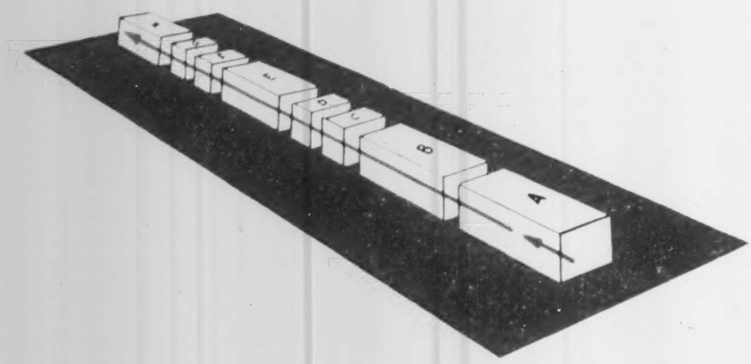
Los Angeles Despite walkout of 1500 workers for four days at Kaiser Steel Corp.'s Fontana Works, which closed down open-hearth furnaces, banked three blast furnaces, and put coke ovens and foundry on reduced operations, supply of semifinished was great enough to permit rolling mill operations to continue.



Painting Line Speeded at Pipe Mill

This electronic spray painting line at the Ambridge, Pa., plant of Spang-Chalfant Division, National Supply Co., is one of the fastest in the country. Seamless steel pipe (size 2⅜ in. to 9⅝ in. OD) are sprayed at a speed of about 500 fpm. Four circular electrodes and six guns are arranged around the conveyor line. The guns open automatically when the leading end of each length arrives at the spray station and close when the tail end has passed through. Pressure tanks with piping, transformer-rectifier, and other control equipment are at the left of the specially designed booth shown in the picture

Heat Treat Furnace Layout by Holcroft...3rd of a Series



Ⓐ Carburizing furnace
Ⓑ First hardening furnace
Ⓒ Quench tank and elevator
Ⓓ Wash and dry
Ⓔ Second hardening furnace
Ⓕ Quench tank and elevator
Ⓖ Wash and dry
Ⓗ Draw furnace

Steady Production Flow . . .
Different Treating Cycles . . .

Holcroft devised an unusual furnace layout for a manufacturer who had the problem of heat treating a continuous flow of small parts . . . but with different treating cycles.

Four furnaces were placed in line. All production was carburized in the first. Part of the work, then, proceeded through the next three furnaces for refining, hardening and drawing. Another portion by-passes the refining operation and is hardened and drawn. The rest of the production is hardened in the second furnace, drawn at high temperatures in the third, and by-passes the fourth.

This is typical of the economies Holcroft produces for its clients. It's how one manufacturer found that Holcroft furnaces—*individually designed for the specific job*—will produce large volume heat treating at a low-cost-per-heat-treated-piece. Holcroft & Company, 6545 Epworth, Detroit 10, Michigan.

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CANADA
Walker Metal Products, Ltd.
Windsor, Ontario

EUROPE
S. O. F. I. M.
Paris 8, France

Sheets, Strip . . .

Sheet and Strip Prices, Page 170 & 171

Boston—By the middle of the fourth quarter, if not before, supply problems in flat-rolled products will be over, except for cold-rolled silicon sheets. The latter are booked through December and, with inventories low, cancellations are not expected. Galvanized and other coated stocks have been in balance for some weeks. Carbon sheet offerings meet current orders and September-October shipments will be heavy. Some users of straight chromium stainless are getting short on those grades, but are not buying in many instances because they expect an easing in nickel-bearing steel, or at least removal of some end-use restrictions. Stainless is being bought on a delivery basis.

New York—Cancellations are beginning to come through on some small and medium sized orders. While producers are booking and shipping substantial tonnages, consumers find they no longer need as much protection and can shorten inventories.

Hot-rolled sheet market is considered pretty well saturated; hot-rolled strip is available for delivery after October. Cold-rolled sheet has a softer tone but a lot more could still be sold in this area; it will be the last of the sheet products to come out from under.

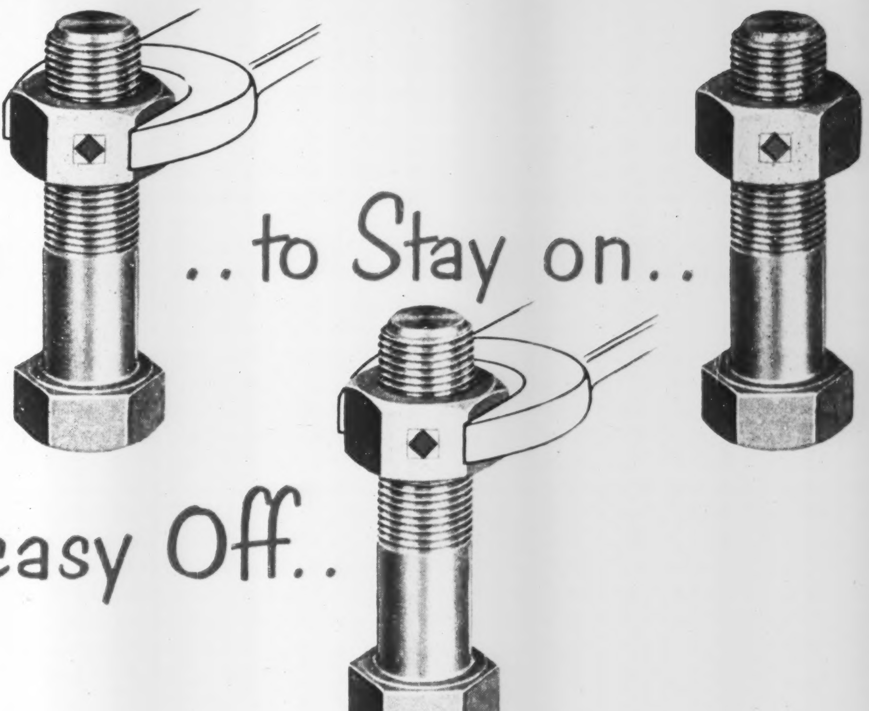
Housewares producers (kitchen cabinets, garbage cans, etc.) are doing well. Spell of slow business is about over for bed manufacturers. Makers of large appliances now operate at what in normal times would be an excellent rate, but which in fact is well under a year ago.

More sales people refer to order books as "theoretically committed." Prospective new customers for alloy materials aren't being turned away as they once were. Food packers are in their busy season now, so the prospective fourth-quarter slowdown in tin plate sales is not abnormal.

Philadelphia—Sheet sales continue strong, with mills generally filled for fourth quarter. District stampers' business is still down, but appliance makers and other big consumers are operating at a good level. Air conditioning people, big users of galvanized sheets, are producing now for next spring's market. There has been no cutback here in orders for electrical grades of sheet by makers of fractional horsepower motors and transformers. Offers of enameling stock are not being turned down. Tin plate sales in the fourth quarter will taper off for the first time in

(*Please Turn to Page* 180)

Easy on . . to Stay on . .



yet easy Off . .

Republic Upson "Nylok*" Nuts

It's easy to start a Republic Upson "Nylok*" Nut . . . either end is "up" . . . no special tools . . . no special techniques.

Wherever you stop wrenching, that's where the nut *stays* . . . even under severe vibration. The nylon plug in the side makes the nut hold tight.

And when it's time to remove a Republic Upson "Nylok*" Nut, just back it off. The nylon plug can't gall, can't rust. Best of all, the nut is ready to *re*-use . . .

SIZES

Light series tapped 1/4" thru 5/8"
Light thick series tapped 1/4" thru 1/2"
Regular sizes tapped 1/4" thru 1/2"
Heavy series tapped 1/4" thru 1/2"

12 WAYS BETTER

- Assemble from either end
- Can be re-used
- Non-galling
- Best wrenching characteristics
- Won't damage threads
- No special know-how
- No special tools
- One piece
- Ideal for mechanical feeding
- No lubricant needed
- Cold-forged
- Lock in any position

Write for samples . . . tell us sizes you use.

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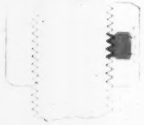
Export Department: Chrysler Building, New York 17, N.Y.



Here's how the "Nylok" principle works

A nylon plug inserted in one of the sides of the cold-forged nut forces the nut tight against the opposite threads as the nut is turned on.

U. S. Pat. Numbers 2,462,603 and 2,450,694 and pending application

Republic
REPUBLIC STEEL
UPSON QUALITY BOLTS AND NUTS

Sheets, Strip . . .

(Concluded from Page 178)

recent years because of an "inventory situation." Quick delivery is possible in nearly all stainless flat-rolled products and consumers are again pushing orders ahead.

Pittsburgh—A transition is slowly taking place in the sheet market, with a supply-demand balance now expected about the middle of the fourth quarter.

Demand from appliance manufacturers continues low; agricultural implement orders still drop. Orders from automakers are still strong, but are expected to drop by yearend in preparation for model changes.

Detroit—The sheet situation here is now being described as "rapidly getting back to normal." Delivery dates now are running only 4 to 6 weeks on cold-rolled sheet with past due shipments, which plagued the automakers during the first half of the year, practically nonexistent. Conversion and foreign steel orders are being washed out for the fourth quarter and auto companies apparently are turning more to local mills.

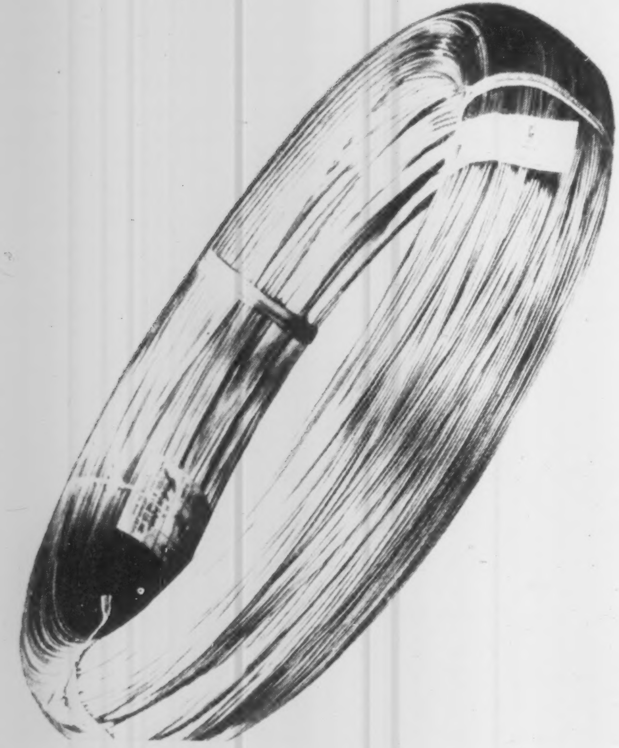
Steelmen in Detroit emphasize, however, that business is not slack. As one expressed it: "Business has been supercolossal. Now it is merely stupendous." Evidence seems to indicate that he was not merely whistling as he passed the graveyard for most companies indicate orders should sustain capacity operation here through the last half of the year.

Perhaps the most important implication is that local mills now are getting some of the business that formerly went into mills outside the area. The honeymoon appears to be just about over and the easing should be most apparent to those mills outside Detroit as automakers begin to mend their home steel fences.

Cincinnati — Sheet and strip production in this district is down considerably. A rolling mill breakdown has been a factor in one instance, while other mills have been faced with some cancellations due to rescheduling of production.

Chicago—Cancellations and setbacks in steel deliveries in recent weeks have fallen heaviest on sheets, which is not unexpected in view of universal use of this product. Cold-rolled sheets have taken the brunt of the cutbacks, although hot-rolled sheets have figured too. Automotive industry is chiefly responsible, although household appliances and farm equipment makers have played a part. What is happening is significant, but is not causing concern. Sheet tonnages turned back are eagerly accepted by other customers.

JOHNSON



High Quality High Carbon Wires

When asked what one thing helped him over his greatest obstacle, Henry Ford replied, "The preceding one."

Here at Johnson, where most of our wire-making machinery was designed and built by our own wire engineers of broad experience, we have built our manufacturing structure on the firm foundation of experience, often winning today's success from yesterday's failure.

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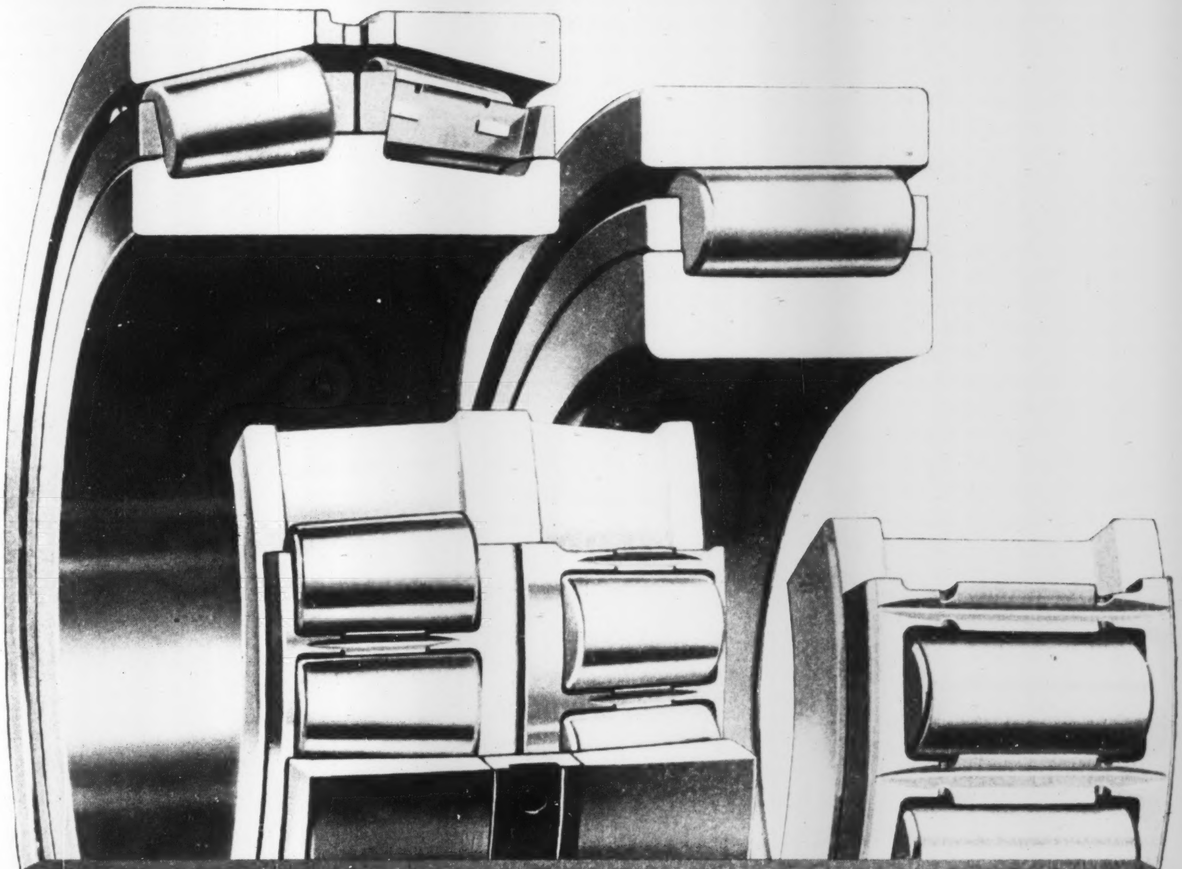

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TAPERED and CYLINDRICAL ROLLER BEARINGS

Give you these BIG ADVANTAGES

- **One-piece cast-bronze cages with machined pads in each roller pocket** to assure accurate guiding of rollers.
- **Stabilized races** to maintain accuracy of fit, improve bearing performance.
- **Individual roller retainment** to assure adequate lubrication at roller, simplify inspection of race surfaces.
- **Precision tolerances and finishes on both rollers and races** for minimum eccentricity and equal load distribution.
- **Controlled quality steels** by use of electric furnace steels, through-hardening or case-hardening grades, and modern heat-treating methods for increased bearing capacity and longer life.
- **Interchangeability** in all types and sizes.

Backed by custom engineering to meet your load and speed requirements, these advantages add up to maximum performance for your bearing dollar. That's why it always pays to specify TORRINGTON!

THE TORRINGTON COMPANY
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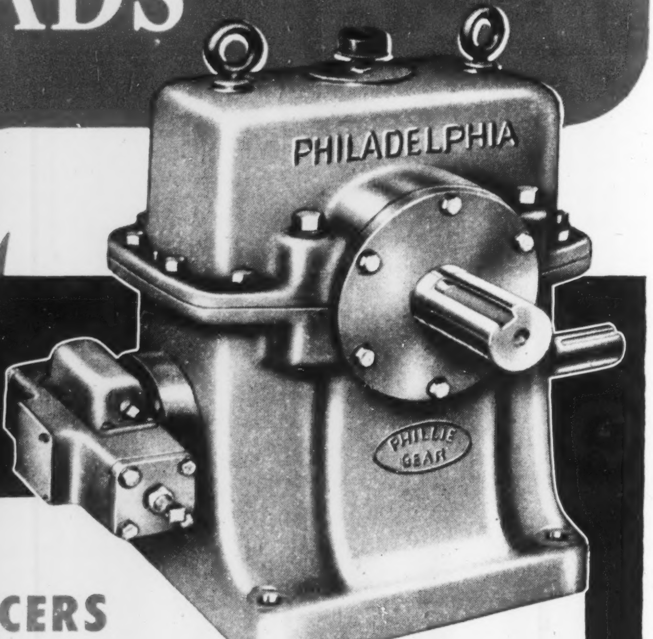

Philadelphia WORM GEAR REDUCERS with "Torque Control"

Here is a worm gear drive which safely and surely protects against overload damage to conveyer assemblies and other industrial machinery yet operates without the use of shear pins or electrical overload relays. The *Torque Control* unit may be set for almost any predetermined torque when this loading is exceeded the driving motor is instantaneously stopped, thus protecting the entire train of equipment.

To restart, only removal of the cause of overload is required. No resetting or replacement of parts is necessary.

The *Torque Control* unit was initially developed for the conveyer industry its highly successful use in this field has led to its application on a wide range of industrial machinery where instant protection against overload or jamming is necessary.

Torque Control may be incorporated on any of the standard line of Philadelphia Worm Gear Speed Reducers in horsepower ratings up to 260 HP and ratios to 6300:1.

Torque Control is another example of advanced power transmission engineering by Philadelphia. Write us for full details.

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Industrial Gears and Speed Reducers
LimiTorque Valve Controls

Plates . . .

Plate Prices, Page 170

Philadelphia—Most eastern platemakers have openings for November on plate and some sizes can still be placed for October delivery. One mill reports plate bookings through December and a carryover into October of about 3 weeks on sheared plate. Orders for light gage plate are generally coming in stronger. October business is slow, coming in spots, though. Boiler manufacturers report slower business the past two to three months, but they are still on a five-day work week. Only substantial shipbuilding is work on carrier *Forrestal*. Most defense work carries B-5, A-4 or A-6 ratings. One rolling mill reports less than 10 per cent of setasides are being taken.

Boston—Except to meet emergencies, plate shops will not pay premium prices. In attempts to reduce costs, fabricators also are revising specifications frequently to avoid higher extras, although under the current pricing system, extras cannot be entirely eliminated. Supply is improving for universal and narrow-gage plates, notably with tank shops. Requirements are holding up well for larger tanks for fuel oil storage, although storage capacity has been increased around 30 per cent in New England during the last two years.

A large volume of plates is required for pipe being fabricated in Portland, Me., for an atomic energy project in Ohio. This pipe is machined and nickelplated.

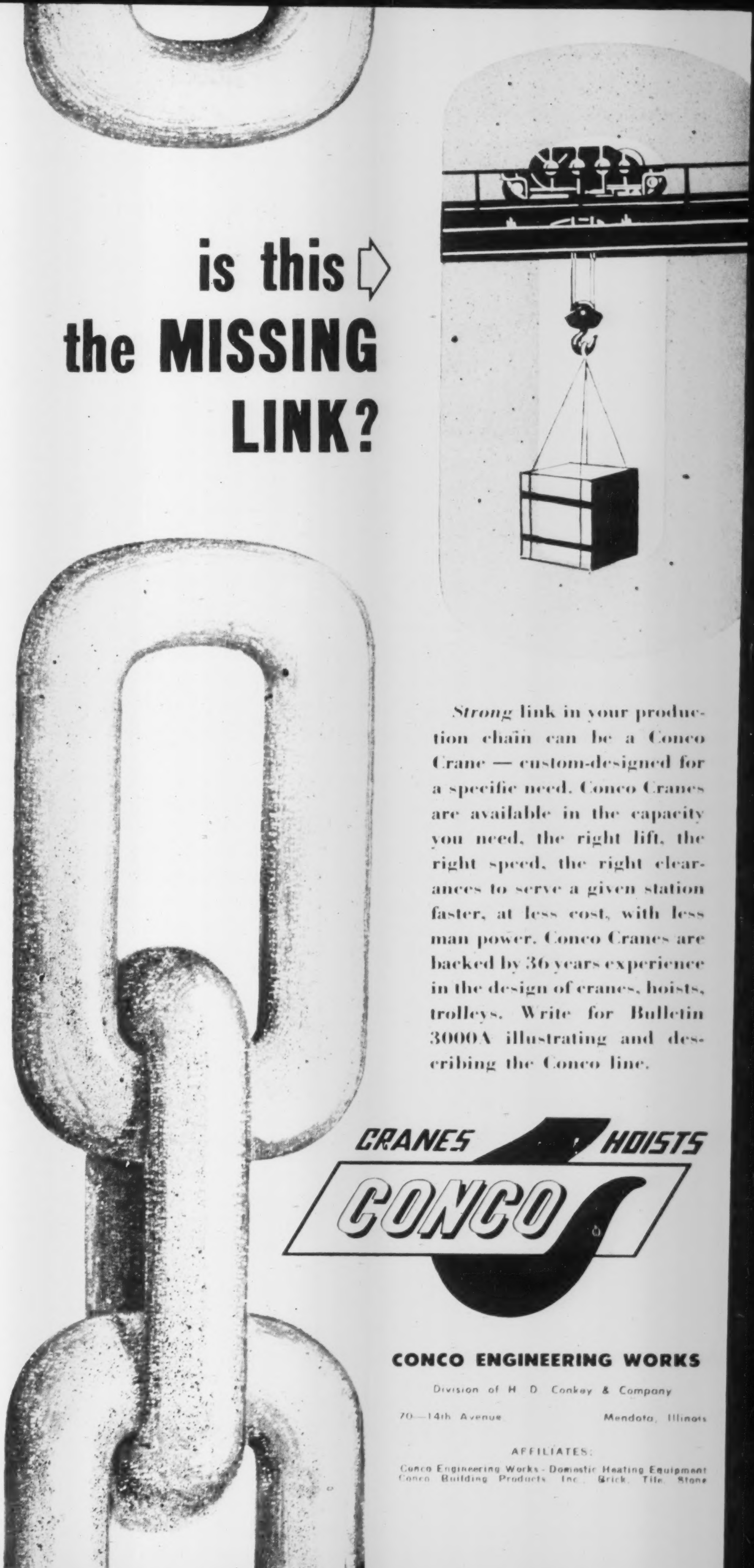
New York—Producers hope to be current by the end of the year. Thick plates (over 1 in.) are a bit easier to find and narrow universal mill plates are considerably softer, but the same can't be said for light gage wide plates.

Railroad car builders' fourth quarter steel ordering—they'll use it in first quarter production—is equivalent in tonnage to that ordered in the third quarter though backlog of car orders is off and level of next year's operations is still in question.

Pittsburgh—A trend is developing towards greater ease in obtaining heavy plates. Light plate and plate less than 100 in. wide are tight. Demand for both types remains firm.

Looking ahead, manufacturers don't expect to catch up with orders for lighter plate until next year.

Birmingham—Plate users are still on the short side of the supply situation in some instances. Several of the district's larger industries are not producing at capacity, some on urgent orders, because the supply of plates will not permit it.



Strong link in your production chain can be a Conco Crane — custom-designed for a specific need. Conco Cranes are available in the capacity you need, the right lift, the right speed, the right clearances to serve a given station faster, at less cost, with less man power. Conco Cranes are backed by 36 years experience in the design of cranes, hoists, trolleys. Write for Bulletin 3000A illustrating and describing the Conco line.

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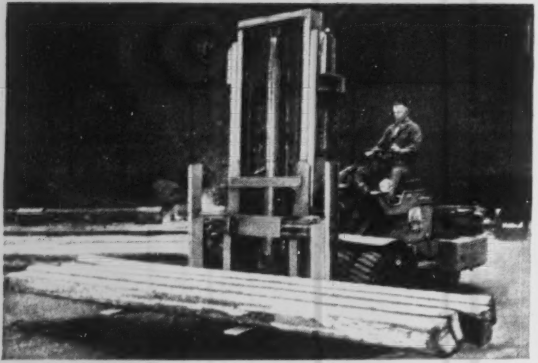
HEAVY INDUSTRY HARNESSES HEAVY-DUTY FORK LIFTRUK ON THE PRODUCTION LINE!



Here you see a LIFTRUK in *The Timken Roller Bearing Company* plant, Canton, Ohio, carrying a load of blooms. This is but one of hundreds of important movements required of a LIFTRUK in the metal-production fields.

LIFTRUKS are available in 5 - 7½ - 10 - 15 Ton capacities. Larger sizes to order.

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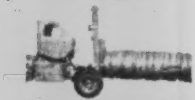
1918 1953 35th YEAR

LIFTRUK features — 1—Rugged dead axle for traction wheels. 2—Extra large elevating hydraulic cylinders. 3—Oversize engine clutch. 4—Generous sturdy construction of tiering frames and fork apron—these and other LIFTRUK features assure you of production materials handling and elimination of shut downs or slow ups.

Let our sales engineers give convincing proof of LIFTRUK performance to meet *your* specific needs.



Also available with Boom, Ram, Scoop and other attachments.

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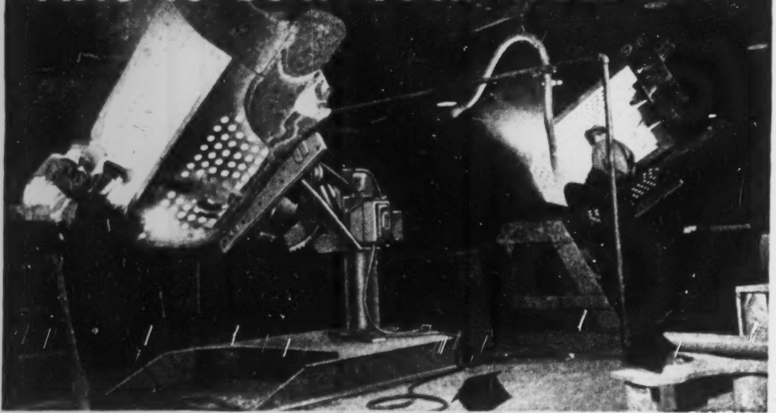

When a touch on a button moves weldments like these into the correct, most convenient position for a downhand pass, you get more arc time, more welding at lower cost. C-F power operated Positioners rotate the work in a full circle at any point in a range of 135° from the horizontal giving welders a choice of an infinite number of downhand welding positions instantly.

Every requirement for faster, better positioned welding constant or variable speed table rotation, full 135° tilt, self-locking gearing which holds the table in any position, oversize built-in main tilt and rotating bearings, choice of two base styles, and many other features are built into C-F Positioners.

C-F Positioners are available in Hand or Power operated models, and are made in capacities up to 30,000 lbs. and larger.

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CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

C-F positioned welds mean better, more economical welds

Tubular Goods . . .

Tubular Goods Prices, Page 173

Philadelphia—More mill tonnage of pipe is being offered district sales offices. Pipe orders are now taken by month instead of quarter, indicating the softer supply tone.

Pittsburgh—The seamless tubing market is strong, with orders at a slightly lower level than earlier this summer. Cutback in orders is expected from automakers, but this is mainly due to the General Motors transmission plant fire. Some seamless tubing in pipe sizes is tight, especially 5 in. to 10 in. tubing.

Specialty tubing orders continue steady.

Los Angeles—Demand for galvanized pipe has eased, but utilities' requirements for black pipe are still high. Pipe fabricators are being squeezed by lack of sheet and skelp. Last winter and spring, anticipating easier supplies of steel, these fabricators accepted 30 to 40 per cent more business than they now have steel for.

Seattle—Activity is lacking in the cast iron pipe market, but improvement is expected within 30 days.

H. G. Purcell, Seattle, has sold 115 tons 18-in. pipe to be used at Ketchikan, Alaska, in construction of a deep water terminal instead of steel piling. North Bend, Oreg., is in the market for 100 tons of 8 and 10-in. pipe.

Wire . . .

Wire Prices, Page 172

New York—Except for a limited number of high carbon specialties, forward buying of finished wire products is light. November schedules are wide open on a large number of carbon products and October filled sluggishly. As a result, more finishing departments are not operating at capacity. Volume placed with automotive consumers is tapering and cancellations have opened up capacity. Mills have caught up with deliveries contributing toward lack of forward buying. Music wire is available from numerous mills' stock.

Boston—Wire products, among the first to experience buying reaction, are still moving slowly for fourth quarter. More cancellations and deferments, covering a wide range of finished wire products, are hampering scheduling for October-November. Part of this easing is attributed to inventory adjustments and part to reduced requirements reported by several consuming industries, including automotive.

Consumers see no need for forward buying since wire mills have caught

NO NEED FOR SEVEN LEAGUE BOOTS FOR BIG LEAGUE STEEL SERVICE

Just one, easy step puts you in touch with a wealth of tooling and production help. When you call your Carpenter Mill-Branch Warehouse or Distributor you set a team of steel specialists to work on any of your requirements involving specialty steels.

If you're after something *more* than deliveries, alone, consider this: Here, awaiting your call, are printed technical booklets, data sheets and other service literature designed to solve a variety of tooling and production headaches . . . field engineering service to help you get the most from every pound of steel you use . . . as well as in-plant job assistance when the going gets rough. And when necessary, this service brings you the experienced counsel of metallurgists direct from the Reading Mill.

Why settle for less than team action and big league service when ONE STEP delivers it so fast and easy? Just reach for your phone and get in touch with your Carpenter Mill-Branch Warehouse or Distributor. The Carpenter Steel Co., 139 West Bern St., Reading, Pa.

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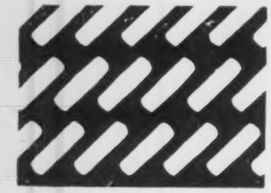
SPECIALTY TOOL • ALLOY and STAINLESS STEELS



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design and durability

Hendrick Perforated Metal

Give a new touch and add to saleability all at once—fabricate Hendrick Perforated Metal into your product design. Hendrick Perforated Metal not only enhances product beauty but it increases its resistance to wear as well.

Select from hundreds of attractive designs in commercially rolled metals and gauges to fit your needs to a "tee." Available with round, square, diamond, hexagonal or slotted perforations in plain or panel effects. Write for more information

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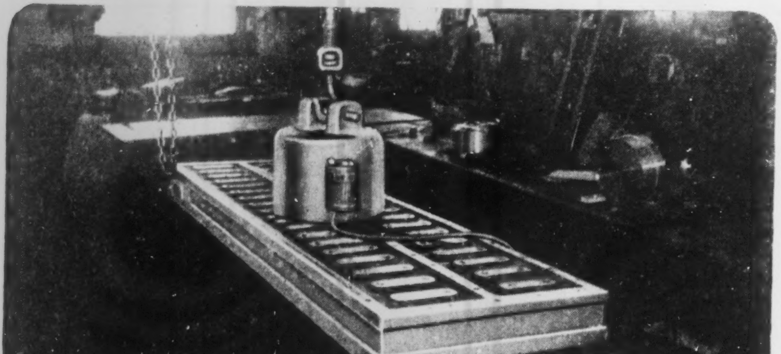
30 DUNDAFF ST., CARBONDALE, PA. • *Sales Offices in Principal Cities*
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids



Pound for pound, volume for volume, the strongest magnet made.

This 12" diameter Walker Lifting Magnet holds work up to 5000 pounds. Highly efficient along production lines for handling all types of work pieces.

The Walker line includes contoured lifting magnets increasing the area of contact for special applications (for wire, pipe, etc.). Your lifting problems can be solved by Walker.

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up with delivery schedules. Inventory corrections likely will be completed by October, and an improvement may develop by November, although buying for that month to date does not substantiate this view.

Philadelphia—Wire producers believe they'll have to sell and sell hard in coming months. Business is needed on merchant wire products. Bolts and nuts, wire rod and other wire products are slow-moving items.

Birmingham—Wire production remains considerably down in this district. The situation at the wire mill probably has been the cause of reports current here that employment at Tennessee Coal & Iron Division, United States Steel Corp., has been drastically reduced. A. V. Wiebel, president, says there has been some slackening in certain departments but that over-all employment at the division has not been affected.

Structural Shapes . . .

Structural Shape Prices, Page 170

Boston—Wide-flange beams are the major headache with structural fabricating shops. Unless demand sloughs off, considerable portion of this shortage will continue until Bethlehem Steel Co.'s rehabilitation program for rolling heavier tonnage at its Saucon Division Works at Bethlehem, Pa., is completed.

Structurals required for bridges, bid or being estimated, total about 4000 tons. This tonnage will be fabricated next year with some of the larger shops already quoting March deliveries. More bridge tonnage will go to shops for fabrication in 1954 than this year.

Philadelphia—Keener competition is evidenced in small construction jobs as procurement of structurals becomes easier except on popular sizes such as wide-flange beams. Warehouses could sell many times their present volume of wide-flange beams if they had them. Mills are more generous in taking orders for structurals. One fabricator reports books filled through the fourth quarter, with business extending into the first and second quarters of next year.

Commercial work in the area promises to be good and several fair-sized industrial jobs are coming up. Apartment house work is slow, but small tonnages going into a number of new schools add up to an impressive total. Bridge work continues to be the backbone of the business.

Pittsburgh—A sizable number of future road and bridge building projects in this area guarantees a steady market for structural shapes for

(*Please Turn to Page 193*)

Looking for a special "character" in Spring Steel, to improve your product?

Check with Sandvik

Wherever spring steel *performance* is vital, it pays to look into the "character" of the steel you specify. By "character" we mean the inherent quality of the material which enables it to meet tough physical demands.

Sandvik Swedish strip steels have a special "aptitude" for tough applications. (For example, take a look at the partial list below). The extraordinary "character" of Sandvik steel results from a basic purity of raw materials, plus specialized methods and close control maintained throughout processing. This assures consistent, successful performance coil after coil, lot to lot.

Sandvik cold rolled high carbon strip steel is available:

- In special analyses for specific applications.
- Precision-rolled in thicknesses to fit your requirements.
- In straight carbon and alloy grades.
- Annealed, unannealed or hardened and tempered.
- Polished bright, yellow or blue.
- With square, round or dressed edges.
- **Wide range of sizes in stock—also slitting facilities available.**

SANDVIK **Swedish Specialty Strip Steels are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical instruments, etc. • Razor Blades • Reeds • Shock Absorbers • A Wide Variety of Springs • Trowels • Vibrator Reeds • Piston Ring Segment and Expanders, etc.**

Sandvik also supplies high quality Swedish Magnet Iron Strip and Wire for specialized electrical purposes such as direct current relays, electromagnetic brakes, couplings, chucks etc.

HIGH FATIGUE LIFE?
SPECIAL PHYSICAL PROPERTIES?
FINER SURFACE FINISH?
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Ask your nearest Sandvik office for further information or technical assistance.

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—don't try to make a standard motor stretch when the job calls for a Wesche Special Motor.

Most powering jobs can be solved satisfactorily with some kind of standard motor. Wesche is in business to solve the tougher problems that call for a specific combination of features. You tell us what the job requires and we design and build the motor that will do it—and go on doing it year after trouble-free year.

Our catalog includes a simple data sheet that can be filled in easily and quickly to give us all the facts we need to quote.

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for TORQUE and SPECIAL MOTORS
for CUSTOM BUILT COLLECTOR RINGS
THE B. A. WESCHE ELECTRIC CO. (WELCO)
1621 VINE ST. CINCINNATI 10, OHIO

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MAKING HOLES!

Round holes, slots, square holes, ornamental holes. Need special perforating? Want precision performance—low cost? Accurate provides you the greatest selection of perforations . . . at a saving in time . . . material . . . money! Our expert engineers are prepared to help you with run-of-the-mill demands—or toughest problem jobs. Write for our FREE catalog!

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1101 SOUTH KEDZIE AVENUE • CHICAGO 12, ILLINOIS

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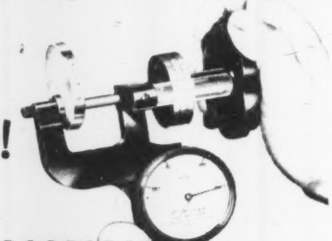
Save Time!
Test Accurately!



Ames PORTABLE HARDNESS TESTERS

Frequent hardness testing of metals before and during fabrication and after heat treating is essential today for best results.

Ames Portable Hardness Testers answer the need for a light weight, accurate, dependable tester that may be carried to the work for on-the-job testing. They are easy to use, require no skill, and get speedy, accurate tests wherever the work may be—no delays, no cutting off specimens—no waiting for laboratory tests.

Besides testing flats, rounds, tubing, etc. Ames Hardness Testers make tests that otherwise would be impossible, such as large gears, knives, saws, blades, struts, frames and assembled parts. Thousands are in use paying for themselves over and over again in time and materials saved.

Send for literature or ask for demonstration in your plant. No obligation.

AMES PRECISION MACHINE WORKS
Makers of Ames Precision Lathes and Bench Millers
Waltham 54, Massachusetts

ORES-COKE-REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10 30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109.00; Salina, Pa., $114.00; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115.00; Hays, Pa., $120.00; Niles, O., $123; E. Chicago, Ind., Joliet, Rockdale, Ill., $125.00; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° F: Massillon, O., $178.50; Clearfield, Pa., $197.50; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109.00; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140.00; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.00.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174.00; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $179.00; Danville, Ill., $169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $255.00; Danville, Ill., $258.00; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Millersville, Martin, Gibsonburg, Woodville, O., $13.75; Thornton, McCook, Ill., $13.85; Dolly Siding, Bonne Terre, Mo., $13.65; Narlo and Bettsville, O., $14.50

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

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*Or within $4.55 freight zone from works

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches		Cents
Diam	Length	per lb
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95

CARBON

35, 40	110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
17 to 20	34, 90	8.03

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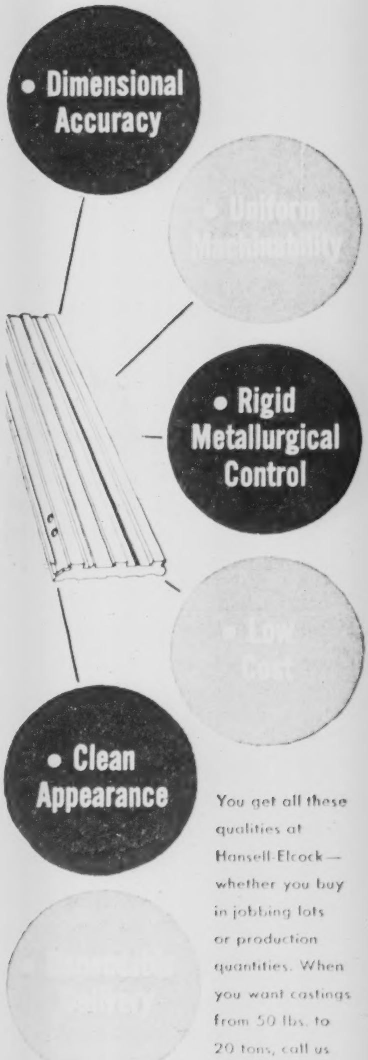
GRAY IRON CASTINGS



You get all these qualities at Hansell-Elcock—whether you buy in jobbing lots or production quantities. When you want castings from 50 lbs. to 20 tons, call us at CA 5-7000 (Chicago).

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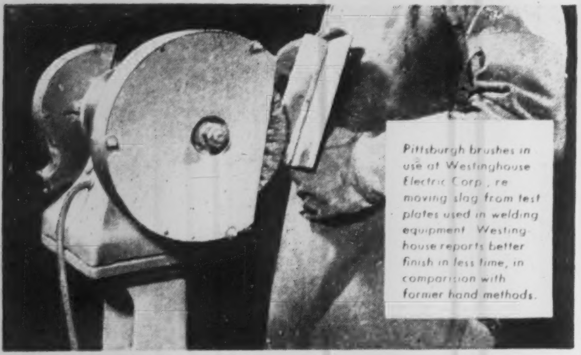


Pittsburgh brushes in use at Westinghouse Electric Corp., removing slag from test plates used in welding equipment. Westinghouse reports better finish in less time, in comparison with former hand methods.

Replace hand finishing with power-driven Pittsburgh Brushes for

Better Cleaning
Lower Labor Costs
Fewer Rejects

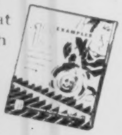
—as these companies did:

Removal of imbedded slag in welding test plates formerly was done by hand at the Westinghouse Electric Corp., Trafford, Pa., using a wire brush and welder's hammer. Pittsburgh brushes, powered by a direct-drive $\frac{1}{2}$ h.p. motor, now remove more slag in less time, and produce a better finish. In addition, Westinghouse reports their Pittsburgh brushes "stand up better than average in use."

Complete cleaning of dried concrete, rust and scale from steel frames used in concrete forming is essential prior to reusing the forms. Pittsburgh wire brushes were installed at the Universal Form Clamp Co., Chicago. Working on a conveyor-fed machine, the Pittsburgh brushes now remove all foreign material at a rate of 50 pieces per hour, replacing former laborious hand brushing and scraping.

De-scaling preheated bar stock at the Dominion Forge & Stamping Co., Ltd., Canada, was formerly done by hand scraping. This never did a complete job, and inclusions resulted which produced defective forgings. Pittsburgh brushes, on specially-designed machines, now do the job, and have "increased efficiency, decreased the amount of scrap, improved work quality, and saved labor."

WRITE TODAY FOR FREE BOOKLET!
Write today for a free copy of our booklet that shows, through actual case histories, how Pittsburgh cuts brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, *Brush Div.*, Dept. W-11, 3221 Frederick Avenue, Baltimore 29, Maryland.



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BRUSHES

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PITTSBURGH PLATE GLASS COMPANY

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C

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ARE FOUNDRY ENGINEERED

Regardless of the type of product you make — if you are interested in strength, toughness, uniform structure, resistance to fatigue, long life, lower machining and lower assembly costs — you'll be interested in C Steel Castings. The point is that they are sound, clean, true to pattern castings that by alloy and heat treating possess an almost unlimited range of mechanical properties.

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Perhaps by cooperating with your engineers in details of design and pattern construction we may be able to save you both machining and assembling costs.

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LANSDOWNE, PENNA.

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TRAVELING CRANES AND HOISTS
up to 125 TON CAPACITY

VICTOR R. BROWNING & CO., INC. WILLOUGHBY (Cleveland), OHIO

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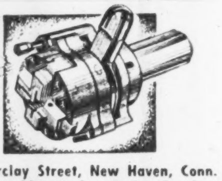

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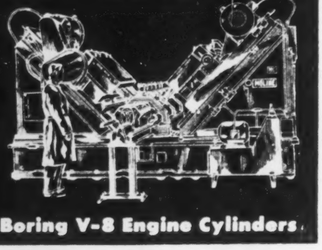


Boring V-8 Engine Cylinders.

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL.

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnston and Sheridan, Pa.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.
(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.
(Mn 79-81%) Lump, $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max) Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump bulk 24.75c per lb of contained Cr; c.l., packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.025% C (simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr. 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.10. **Primos and High Speed Grades** (V 35-55%, 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb. No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb, smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 28.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅛ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb or briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l. 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx. Ta 20% approx. and Cb and Ta 60% min, C 0.30% max), ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

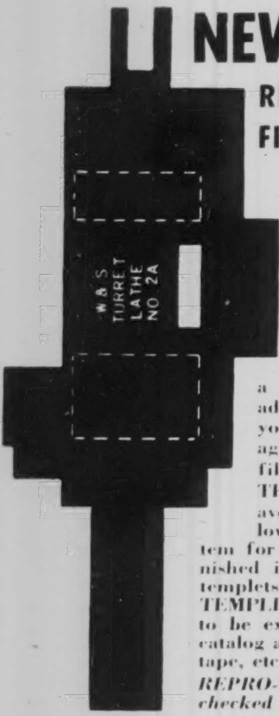
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c. Packed c.l. 15.50, ton lots, 15.75c, less ton lots 16.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41, Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.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(Illustration actual size)

Individual ¼" scale REPRO-TEMPLETS are now available for any one of 10,000 machine tools or pieces of shop equipment. By a new exclusive method, these REPRO-TEMPLETS are backed with a permanent pressure-sensitive adhesive, enabling you to use your templets over and over again. Used in conjunction with film grid sheets, the REPRO-TEMPLETS (at 8c to 12c each, average cost) provide a simple, low-cost, standardized layout system for any metal-working plant. Furnished in sheets of 6 to 24 identical templets @ $1. per sheet, REPRO-TEMPLETS are now so inexpensive as to be expendable. Write for complete catalog and prices of grid-sheets, layout tape, etc.

REPRO-TEMPLETS are manufacturer-checked for accuracy.

REPRO-TEMPLETS INC.

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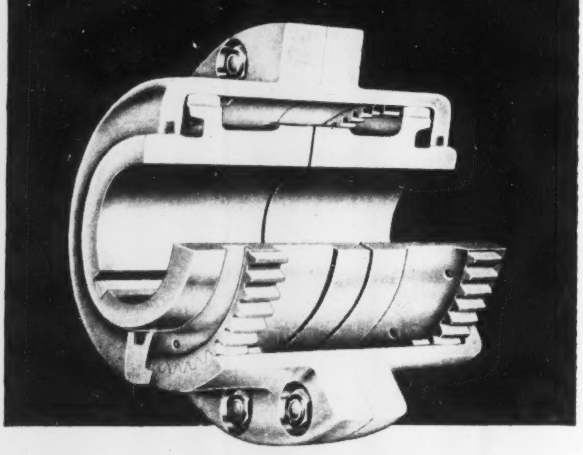

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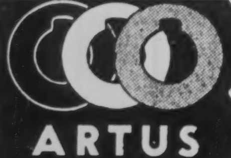

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Structural Shapes . . .

(*Continued from Page* 186)

some time to come. Supply of several structural sections has eased recently, but lightweight beams and wide flange beams are still tight.

Indications are, said one fabricator, that tight items will be easier in supply by the first quarter of next year. There is not much prospect of easing before then.

Chicago—The easing in demand which some steel products are experiencing is not shared by structural steel. Larger sizes and wide-flange types continue to be sought in volume exceeding output. Backlogs of orders appear solid on fabricators' books. Heavy construction is of long-term nature as a rule and does not suffer cutbacks to the degree of consumer goods.

Los Angeles—Construction started on the $14 million Beverly Hilton Hotel. Del E. Webb Construction Co., Los Angeles and Phoenix is the general contractor.

Scrap . . .

Scrap Prices, Page 196

Chicago—In less than two weeks, prices on steelmaking grades of scrap have dropped $6 to $7 a ton. A large mill purchased first at a level of $4 to $5 a ton less than before and a few days later made further acquisitions at $2 less. Material in the second purchase was confined to industrial or railroad scrap for direct shipment from producer to mill. No dealer scrap was involved. No. 1 heavy melting is now $38; No. 1 factory bundles, $39 a ton. Scrap offerings are light, but mill inventories are good.

Boston—Prices on all steel grades of scrap are sharply lower. Only lack of trading apparently prevents cast grades from following. Demand for steel scrap also is slow, causing a slump of as much as $3 a ton on heavy melting steel. Mills are well inventoried, notably on No. 2 melting and bundles, and new purchases are not keeping pace with consumption. Steel mill operations also are more erratic week-by-week.

New York—Steel scrap prices are softer on a minimum volume of new buying. Sharpest break is in No. 2 bundles, brokers' buying price being $25. Not only are heavy melting grades lower, but also borings, turnings and structural and plate low phos shearings. Cast grades are slow, but prices remain stagnant.

Buffalo—The scrap market has a tough time maintaining steadiness as dealers have difficulty finding buyers at recently reduced price levels. One of the chief mill consumers is refusing shipments. Another mill buyer is holding orders to small tonnages. Rumblings are heard of the possibility of still lower prices. New business is reported in cast scrap at the current lower ranges.

Philadelphia—Scrap buying is tapering. Shipments on last month's orders still run high, and August shipments probably topped July. While the letdown to a degree is a normal one, scrap men believe the prevalent pessimism is overemphasized. Consumers have pared order tonnage somewhat to prevent being caught with heavy stocks. Inventories generally are good.

Scrap prices have fallen several dollars in the week. Latest prices are: No. 1 steel $41-$42; No. 2 steel, $36-$37; No. 1 bundles, $41-$42; No. 2 bundles, $33.50-$34.50; No. 1 busheling, $41-$42; electric bundles, $42-$43; machine shop turnings, $26-$27; mixed borings and turnings, $29-$30; short shovelings, $31; structurals and plate, $45; couplers, springs and wheels, $48-$49.

Pittsburgh—Scrap prices continue the skid which began late last month. No. 1 heavy melting dropped to $42-$43; No. 2 heavy melting, No. 1 and No. 2 bundles and No. 1 busheling also dipped $2 per ton. Cast iron grades dropped $1 per ton on the average, while railroad scrap fell $2 per ton.

Little active trading is taking place, as the market reacts to lack of demand.

Detroit—Scrap in this area suddenly took a tumble last week as brokers discovered the mills weren't anxious to buy. One broker has over 5000 tons of scrap "without a home."

Some observers feel that the economy move on the part of the mills is indicative of a softening in the finished steel market; others that scrap has just been generated at such a high rate that the mills have reached a point where it cannot be readily assimilated.

Regardless of the cause, however, as dealing in the motor city comes to a standstill, it seems probable that scrap in Detroit is headed for a belated summer softening that may well last for some time.

Cleveland—Steelmaking scrap prices eased $1 a ton further last week in a market practically devoid of new business. Brokers' hopes that weakness in the market is temporary is dimmed somewhat by the erratic trend in steelmaking operations. In districts where high-alloy steel production is predominant, fur-

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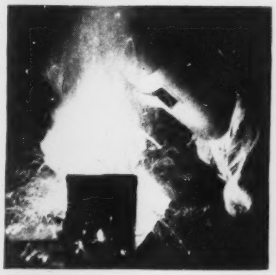
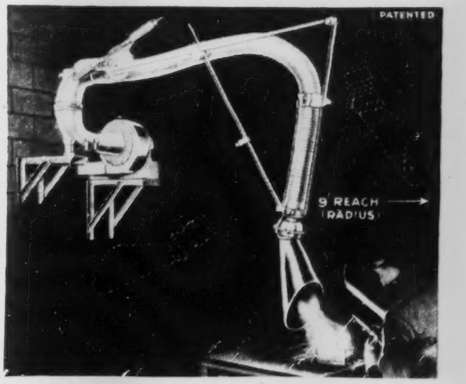


Welding without ventilation. Note smoke and gas clouds.

(Right) Welding with Ruemelin Fume Collector.



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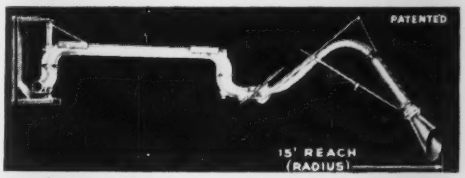

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nace operations are off quite sharply.

Youngstown Scrap prices have eased here again, mainly on the basis of slow demand. Mills just aren't buying big lots, taking only day-to-day requirements and feeling that inventories are sufficient to protect winter needs. Most scrap buyers are scrutinizing their scrap deliveries pretty carefully and are turning down material that isn't up to specifications.

Los Angeles Steelmakers are displaying little interest in adding to scrap inventories, estimated at this time as normal. Consequently, little scrap is moving.

Seattle The larger scrap consumers in this area have comfortable inventories of good grades. Receipts are ample for current consumption. Occasional shipments of excellent electric scrap are coming from British Columbia. While the local mill has not advanced heavy melting prices, Oregon interests have been in this market buying at $2 over and paying the freight to Portland, Oreg.

The campaign for federal scrap export licenses is status quo. Repeated and concerted effort to obtain permits to ship to Japan, except in isolated instances, has failed to change the national policy.

Meanwhile the local situation is said to be more acute, with an accumulation of grades unsalable here which could readily be sold in Japan. Exporting interests state that the military and security departments are opposed to export on the ground an emergency may rise. On the other hand, Department of Commerce officials are willing to grant permission to sell overseas, convinced there is no shortage in this country. However, the military branches have the last say. Dealers are strongly backing the exporting interests.

Pig Iron . . .

Pig Iron Prices, Page 174

Buffalo Mixed tendencies rule the merchant pig iron market, but up to the present time no reports are heard of any piling of iron. Output may be off slightly as a result of a strike of workers in the coke oven department of Bethlehem Steel Co.'s plant. Sellers are showing various opinions over future sales prospects. Mixed trends also are apparent in the amount automotive casters will require.

Philadelphia Imports of pig iron are taking their toll. An estimated 10,000 tons of foreign iron is reported on its way here; delivery of over 2500 tons was expected last week. German iron is offered at $52. Austrian, Australian and a little Spanish pig is being sold here. 1500 tons of off-grade Indian ore was purchased at $43.50. Low phos iron ranges from $55 to $57 and high phos is quoted at $53 with shadings of $1 to $2 on some sales.

Cincinnati Pig iron is not enjoying the usual September pickup in business. So far, the increase in business has been only slight. Jackson Iron & Steel Co., Jackson, O., is expected to blow in its rebuilt furnaces the latter part of this month. This will augment the supply of silvery pig iron in this area.

Chicago More merchant pig iron is being made in this district now than at any time in recent months with Interlake Iron Corp. lighting its rebuilt and enlarged "A" furnace at South Chicago, Ind., Sept. 1. There is sufficient iron available at present and no shortage threatens for the future. Jobbing foundries apparently are holding up their melting rate better than captive shops. U. S. Steel Corp. blew in its Gary No. 6 blast

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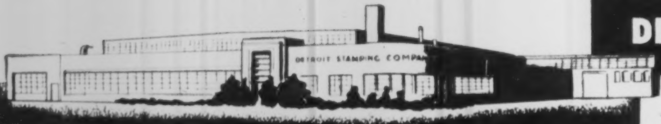

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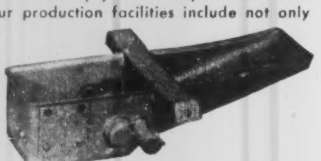

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furnace Aug. 25, following repairs, and took off "E" furnace at South Works Aug. 26.

Iron Ore . . .

Iron Ore Prices, Page 189

Cleveland — First 4 million-ton month in the history of United States Steel Corp.'s Pittsburgh Steamship Division was reported for August when its 64 carriers loaded 4,140,363 gross tons. The previous high was 3,974,477 tons, established in August, 1952. The season's cumulative total to Sept. 1 was 18,887,629 tons, another all-time high.

The Great Lakes ore fleet hauled 3,341,418 tons during the week ended Aug. 31 compared with 3,246,545 tons for the like week a year ago. August shipments came to 15,236,527 tons, an increase of 868,900 tons over the total for the same month last year. The cumulative total to Sept. 1 is 65,791,836 tons, an increase of 28,004,433 tons or 74.11 per cent over a year ago.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1210 tons, pier, Hoboken, N. J., Port of New York Authority, to American Bridge Co., Pittsburgh; J. Rich Steers Co., New York, general contractor.

750 tons, prefabricated multipurpose hangars and doors, Lincoln, Nebr., air field base, to Capitol Steel & Iron Co., Oklahoma City, Okla.; Corps of Engineers, Omaha.

500 tons, estimated, power plant building, naval powder factory, Indian Head, Md., to Barber & Ross, Washington; Norair Engineering Corp., Washington, general contractor; Bethlehem Steel Co., concrete reinforcing steel.

435 tons, bridge, Queens Midtown expressway, Triboro Bridge and Tunnel Authority, New York, to Harris Structural Steel Co., New York; Gull Construction Co., Queens, general contractor.

400 tons, incinerator building No. 3, Washington, to Bethlehem Steel Co., J. D. Hedin Construction Co., Washington, general contractor; Barber & Ross, Washington, concrete reinforcing steel.

385 tons, Cumberland Valley School, Silver Spring, Pa., Ritter Bros., general contractor, to Goetz Welding Co.

350 tons, shapes and bars, county high school, Princess Anne, Va., to Globe Iron Works, Norfolk, Va., and Hall-Hodges Co., Norfolk; Doyle & Russell Co., Norfolk, general contractor.

300 tons, country day school, Weston, Mass., to West End Iron Works, Cambridge, Mass.; J. A. Singarella Co., Boston, general contractor.

280 tons, junior-senior high school, Susquentia, Pa., joint school board, M. I. Haldeman & Sons, general contractor, to Standard Equipment Co.

270 tons, three 50-ft rolled beam span bridges, Windsor, Conn., to Bethlehem Steel Co.; Brunalli Construction Co., Southington, Conn., general contractor.

250 tons, shapes and bars, Samuel Johnson elementary school, Bridgeport, Conn., to Port Chester Iron Works, Port Chester, N. Y., and Fox Steel Co., Orange, Conn.; John Zandonella, Bridgeport, general contractor.

210 tons, high pressure boiler plant, Altoona, Pa., Pennsylvania Railroad, to Pittsburgh Bridge & Iron Co., Pittsburgh.

140 tons, store and warehouse building, Buten Paint Co., from Johan A. Robbins Inc., general contractor, to Bethlehem Steel Co.

110 tons, bridge, Berks county, Pennsylvania, Pennsylvania Department of Highways, Richard J. Nissley, general contractor, to Bethlehem Steel Co.

105 tons, shapes and bars, East Side elementary school, Bangor, Me., to Hussey Mfg. Co., Berwick, Me., and Bancroft & Martin Rolling Mills Co., Portland, Me.; Consolidated Co., Portland, general contractor.

100 tons, two bridge spans in Alaska, to Schmitt Steel Co., Portland, Oreg., for Alaska Road Commission.

STRUCTURAL STEEL PENDING

3600 tons, Umatilla county, Oregon, Columbia river bridge; American Bridge Co., San Francisco, low $2,186,913, for superstructure; Cascade Contractors and Austin Co., Seattle, low $676,306 for piers; under consideration by Judge J. J. Sturgis, Pendleton, Oreg.; plans by Tudor Engineering Co., San Francisco.

2500 tons, three-span plate girder bridge, Westfield river, West Springfield, Mass.; bids Sept. 15, Boston.

1000 tons, bridgework, Lycoming county, legal Route 20 (sec. 21); due Sept. 18, Pennsylvania Department of Highways and Bridges.

500 tons, barker and chipper plant, Rayonier Inc., Port Angeles, Wash.; bids in.

400 tons, road work, York county, legal Route 124 (sec. 2); due Sept. 18, Pennsylvania Department of Highways and Bridges.

330 tons, Essex county, New Jersey, Route 21 (sec. 4D); due Sept. 8, New Jersey Department of Highways.

300 tons, tower steel; bids to Bonneville Power Administration, Portland, Oreg., Sept. 14.

200 tons, substation steel; bids to Bonneville Power Administration, Portland, Oreg., Sept. 9.

200 tons, office building, garage and warehouse, Harrisburg, Pa.; bids Sept. 16, state of Pennsylvania.

200 tons, municipal coliseum; bids to Spokane, Wash., Sept. 17.

150 tons, high school and shops, Anchorage, Alaska; Patti-MacDonald Construction Co., low $2,850,000.

(*Please Turn to Page* 198)

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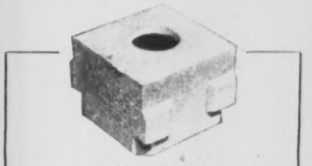

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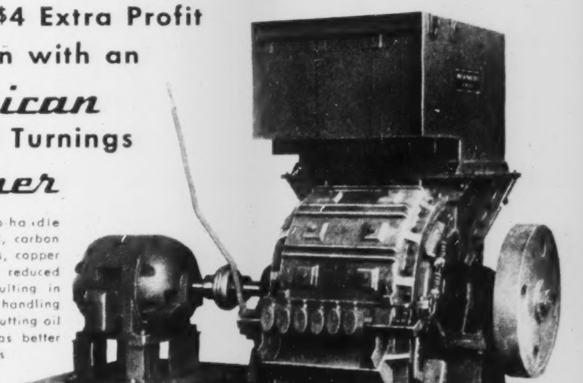

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STEELMAKING SCRAP COMPOSITE

Sept. 3	$40.50
Aug. 27	42.17
Aug. avg.	43.40
Sept. 1952	43.00
Sept. 1948	43.33

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*36.00-37.00*
No. 1 busheling	*42.00-43.00*
Machine shop turnings	26.00-27.00
Mixed borings, turnings	29.00-30.00
Short shovel turnings...	30.00-31.00
Cast iron borings	29.00-30.00
Cut structurals	*46.00-47.00*
Heavy turnings	40.00-41.00
Punchings & plate scrap	*47.00-48.00*
Electric furnace bundles	*45.00-46.00*

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Charging box cast	*40.00-41.00*
Heavy breakable cast	*38.00-39.00*
Unstripped motor block	*34.00-35.00*
No. 1 machinery cast	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*44.00-45.00*
Rails, 2 ft. and under	*51.00-52.00*
Rails, 18 in. and under	*47.00-48.00*
Rails, random lengths	*47.00-48.00*
Railroad specialties	*48.50-49.50*

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*35.00-36.00*
No. 1 busheling	*40.00-41.00*
Machine shop turnings	21.00-22.00
Mixed borings, turnings	25.00-26.00
Short shovel turnings..	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	*42.00-43.00*
Alloy free, short shovel turnings	28.00-29.00
Electric furnace bundles	*41.00-42.00*

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Charging box cast	*41.00-42.00*
Stove plate	*40.00-41.00*
Heavy breakable cast	*35.00-36.00*
Unstripped motor blocks	25.00-26.00
Brake shoes	*35.00-36.00*
Clean auto cast	*42.00-43.00*
No. 1 wheels	*37.00-38.00*
Burnt cast	*32.00-33.00*
Drop broken machinery	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*
R.R. Malleable	*47.00-48.00*
Rails, 3 ft. and under	*51.00-52.00*
Rails, 18 in. and under	*52.00-53.00*
Rails, random lengths	*44.00-45.00*
Cast steel	*47.00-48.00*
Railroad specialties	*49.00-50.00*
Uncut tires	*48.00-49.00*
Angles, splice bars	*50.00-51.00*
Rails, rerolling	*52.00-53.00*

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*41.00-42.00*
No. 2 bundles	*34.00-35.00*
Machine shop turnings	*22.00-23.00*
Short shovel turnings	*28.00-29.00*
Cast iron borings	*28.00-29.00*
Low phos.	*46.00-47.00*
Electric furnace bundles	*44.00-45.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*41.00-42.00*
No. 2 bundles	*33.50-34.50*
No. 1 busheling	*41.00-42.00*
Electric furnace bundles	*42.00-43.00*
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	*29.00-30.00*
Short shovel turnings	*31.00*
Structurals & plate	*45.00*
Heavy turnings	41.00
Couplers, springs, wheels	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	38.00
Charging box cast	40.00
Heavy breakable cast .	41.00-42.00
Unstripped motor blocks	31.00
Drop broken machinery	47.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	*28.00-29.00*
No. 1 bundles	*33.00-34.00*
No. 2 bundles	*25.00-26.00*
Machine shop turnings	*16.00-17.00*
Mixed, borings, short turnings	*19.00-20.00*
Low phos. (structural & plate)	*35.00-36.00*
Short shovel turnings	*20.00-21.00*

Cast Iron Grades

No. 1 cupola	32.00-33.00
Unstripped motor blocks	24.00-25.00

DETROIT

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*38.00-39.00*
No. 2 bundles	*28.00*
No. 1 busheling	*33.00-34.00*
Machine shop turnings	*16.00*
Mixed borings turnings	*18.00*
Short shovel turnings	*20.00*
Punchings & plate scrap	*37.00-38.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	34.00-35.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Brokers' buying prices)

No. 1 heavy melting	38.00
No. 2 heavy melting	35.00
No. 1 bundles	38.00
No. 2 bundles	32.00
No. 1 busheling	38.00
Machine shop turnings	17.00*
Mixed borings, turnings	20.00*
Short shovel turnings	21.00*
Cast iron borings	20.00*

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	40.00
Heavy breakable cast	38.00
Drop broken machinery	49.00

Railroad Scrap

No. 1 R.R., heavy melt.	*42.00*
Malleable	47.00
Rails, 48-in. and under	54.00
Rails, random lengths	46.00

*F.o.b. shipping point

CHICAGO

No. 1 heavy melting	*37.00-38.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 factory bundles	*38.00-39.00*
No. 1 dealer bundles	*37.00-38.00*
No. 2 bundles	*30.00-32.00*
No. 1 busheling	*37.00-38.00*
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*20.00-22.00*
Cast iron borings	*20.00-22.00*
Cut Structurals, 3 ft.	*42.00-44.00*
Punchings & plate scrap	*42.00-44.00*
Electric furnace bundles	41.00-43.00

Cast Iron Grades

No. 1 cupola	*37.00-39.00*
Stove plate	33.00-35.00
Unstripped motor blocks	33.00-35.00
Clean auto cast	43.00-45.00
Drop broken machinery	43.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
R.R. Malleable	43.00-45.00
Rails, 2 ft. and under	*50.00-52.00*
Rails, 18 in. and under	*52.00-54.00*
Angles, splice bars	*48.00-50.00*
Rails, rerolling	*53.00-55.00*

BIRMINGHAM

No. 1 heavy melting..	31.00-32.00
No. 2 heavy melting..	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	29.00-30.00
Machine shop turnings	20.75-21.75
Short shovel turnings.	22.75-23.75
Cast, iron borings.....	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
Charging box cast	30.00-31.00
Stove plate	35.00-36.00
Heavy breakable cast..	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft and under.	45.00-46.00
Rails, random lengths.	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting ...	43.00-44.00
No. 2 heavy melting ...	32.50-33.50
No. 1 bundles	37.00-38.00
No. 2 bundles	30.00-31.00
Machine shop turnings..	17.00-18.00
Short shovel turnings..	19.00-21.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	35.00-36.00
Heavy breakable cast	35.00-36.00
Unstripped motor blocks	34.00-35.00
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	34.00-35.00

Railroad Scrap

Malleable	42.00-43.00
Rails, 18-in. and under	50.00-51.00
Rails, random lengths .	46.00-48.00
Uncut tires	44.00-45.00
Angles, splice bars ..	46.00-47.00
Rails, rerolling	51.00-53.00

BUFFALO

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	37.00-37.50
No. 2 bundles	35.00-35.50
No. 1 bundles	42.00-43.00
No. 1 busheling	42.00-43.00
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.50-28.00
Short shovel turnings..	28.50-29.00
Cast iron borings	28.50-29.00
Low phos	45.00-46.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	38.00-38.50
No. 1 machinery	42.00-42.50

Railroad Scrap

Rails, random lengths	46.50-47.00
Rails, 2 ft and under..	51.50-52.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	*26.00-26.50*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	*24.00-24.50*
Machine shop turnings	*16.00-16.50*
Mixed borings, turnings	*18.50-19.00*
Short shovel turnings	*19.50-20.00*
No. 1 cast.............	30.00-31.00
Mixed cupola cast	26.00-28.00
No. 1 machinery cast..	38.00-39.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting..	33.00
No. 2 heavy melting..	29.00
No. 1 bundles	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	14.00
Mixed borings, turnings	14.00
Short shovel turnings..	14.00
Electric furnace, No. 1	38.00-40.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	*25.00-30.00*
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	26.00

Railroad Scrap

Rails, random lengths.	34.00-35.00

SAN FRANCISCO

No. 1 heavy melting ..	28.00
No. 2 heavy melting ..	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings.	10.00
Mixed borings, turnings	29.00
Short shovel turnings..	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punching & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast ..	47.00
Stove plate	46.00
Heavy breakable cast .	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt	37.00
Malleable	55.00
Rails, 3-ft and under	42.00
Rails, 18-in. and under	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars ..	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting .	20.00
No. 1 bundles	23.00
No. 2 bundles	20.00
Machine shop turnings	8.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	37.00-40.00

HAMILTON, ONT.

(Delivered prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap ..	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory:	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings ..	22.50

Cast Iron Grades

No. 1 machinery cast .	46.00-50.00

†F.o.b. shipping point

94.9% of Lockheed's 50,000 employees are enrolled in the Payroll Savings Plan

ROBERT E. GROSS

President, Lockheed Aircraft Corporation

National Chairman, 1953 Aircraft
Industry Payroll Savings Drive

"A man's personal economic security is the sum of his own diligent effort, a financially sound government and a systematic savings plan. He has the earnings and he has the government that can protect the individual. However, human nature being what it is, not everyone maintains a systematic plan of savings. So here is a plan designed to help the employee—the Payroll Savings Plan, whereby his company will regularly invest a part of his earnings (he specifies the amount) in United States Savings Bonds, America's safest form of investment. We at Lockheed have endorsed and encouraged this plan because we know what it does to assure security—both individual and national."

Lockheed Aircraft Corporation recently conducted a person-to-person canvass that put a Payroll Savings Application Blank in the hands of every employee of Lockheed's eleven plants in Southern California. At the conclusion of this one-week campaign, 36,419 of the 38,037 employees—95.7%—had signed up on the Payroll Savings Plan. Three of the eleven plants achieved 100% enrollment.

Lockheed's 95.7% in the Southern California plants is the highest employee participation of any company or group of this size this year. The previous national record in the aviation industry—92%—was set by Lockheed's Georgia Division in April, 1953. Of Lockheed's total payroll—50,000 men and women—94.9%—are building ". . . security—both individual and national" by systematic investment in U.S. Savings Bonds.

45,000 companies operate Payroll Savings Plans. In many of these companies employee participation ranges from 60% to 80%; in some, it is even higher. On the basis of Payroll Savings Records, it is safe to estimate that 60% or more of the personnel of a company will join the Payroll Savings Plan—

—if the many personal benefits of the Payroll Savings Plan are properly presented to them by management.

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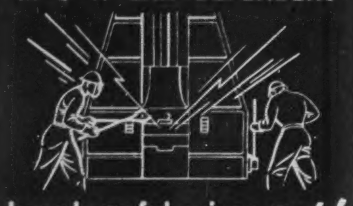
STEEL

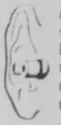
The Weekly Magazine of Metalworking

M·S·A EAR DEFENDERS



keep harmful noises *out*!

If your workers "can't hear themselves think," chances are *you'll* hear about it in lowered production and damaged hearing.



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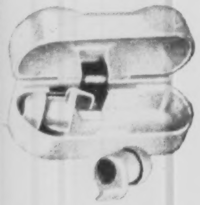
M.S.A. Ear Defender design insures comfortable fit; complete closure of ear canal; easy to insert, remove. Ear Defenders are easily cleaned with soap and water. Convenient carrying case keeps them clean in pocket. Write for details.



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100 tons, air terminal building, McGuire air force base, bids Sept. 11.

PLATES . . .

PLATES PENDING

12,000 tons, 615-mile, 8⅝ in. oil pipeline, Haines to Fairbanks, Alaska, also tanks, pumping facilities, etc.; bids to U. S. Engineer, Oct. 14.

1750 tons, five 80,000-bbl. floating roof type ground oil storage tanks, Manchester, Wash., Odegard Construction Co., Everett, Wash., low $1,321,554, to 13th Naval District, Seattle.

550 tons, fueling and oil storage facilities, Elmendorf air base, Alaska; general award to Birch, Lytle Green, Seattle, low $7,777,173.

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ALL METALS
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EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

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ASSISTANT MAINTENANCE SUPERINTENDENT—for large semi-integrated Eastern Steel Mill. Plate Mill experience preferred. Must be capable of initiating and supervising a Preventative Maintenance Program. M. E. an asset. Reply Box 800, STEEL, Penton Bldg., Cleveland 13, Ohio.

LUBRICATION ENGINEER—for large semi-integrated Eastern Steel Mill. Must have Steel Mill experience, and must be capable of initiating and supervising a Preventative Maintenance Program. M. E. an asset. Reply to Box 801, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
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Tank, 8,000-Gallon, Coiled and Non-Coiled

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40 & 50-Ton Capacity, Length 70' and 74'
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Hydraulic Controls
Converted to Diesel about 1945

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Our employees know of this ad.

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TRANSFORMERS AND COILS BUILT TO YOUR SPECIFICATIONS.

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40 Years of Dependable Service

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PLATE ROLLS, handling up to 4½" thick steel plate.
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20 Tons	16 Gauge	34 x 120"
15 Tons	18 Gauge	34 x 120"
10 Tons	26 Gauge	36 x 84"
10 Tons	26 Gauge	36 x 108"
15 Tons	28 Gauge	36 x 84"
10 Tons	28 Gauge	36 x 108"

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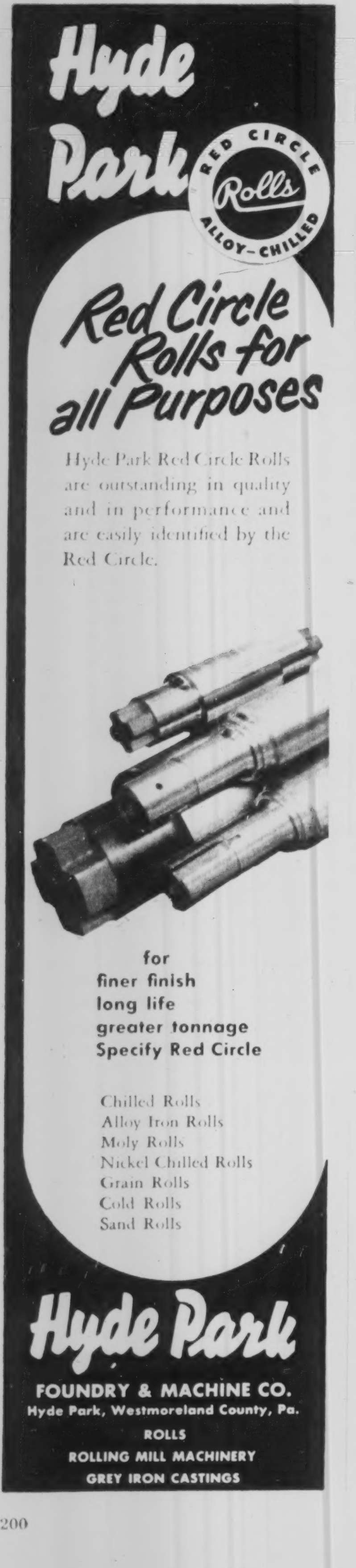
GLAZER STEEL CORPORATION

KNOXVILLE, TENNESSEE — PHONE 4-8601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Hyde Park Red Circle Rolls are outstanding in quality and in performance and are easily identified by the Red Circle.

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ROLLING MILL MACHINERY
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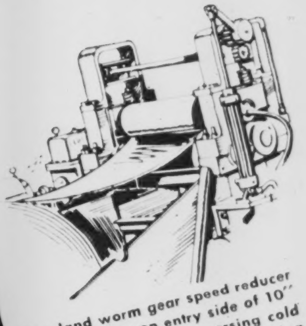


Cleveland worm gear speed reducer drives coil box on entry side of 10" & 26" x 28" 4-high reversing cold mill and Cleveland worm gearing operates screwdowns. Illustration by courtesy of the Lewis Machinery Division of Blaw-Knox Co.

WORM GEARING—universal in its application—affords advantages for almost every power transmission job. Select drives to meet your need from the complete Cleveland line.

CLEVELANDS help roll steel orders to exact "specs"

THIS 4-high reversing cold strip mill rolls steel to exact specifications—width, gauge, temper and finish. To insure smooth delivery of strip to the mill, the builder installed a Cleveland worm gear speed reducer on the coil box. Two sets of Cleveland worms and gears are used for the screwdowns, to control raising and lowering the reduction rolls. Thus from start to finish, Clevelands are at work helping to roll orders to customers' exact specifications.

Machinery builders and users alike find that Clevelands transmit power with a uniform, uninterrupted torque flow throughout their remarkably long lifetime. Cleveland casehardened steel worms meshing on nickel-bronze gears actually improve with use. Thus Cleveland efficiency never diminishes even after years of service.

Before you decide on drives for your machines, be sure you have the latest information on Cleveland worm gearing. Write for new Catalog 400. The Cleveland Worm and Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

CLEVELAND
Worm Gear
Speed Reducers

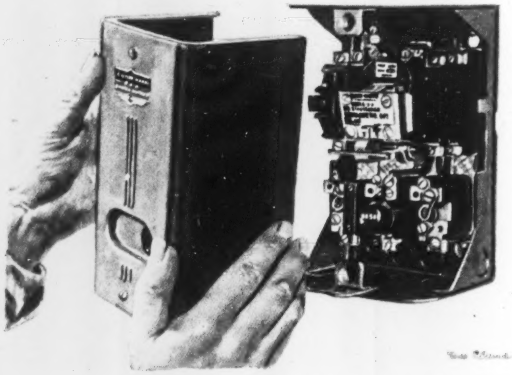
THE THREE CUTLER-HAMMER STARS ★ ★ ★ STAND FOR THREE NEW STANDARDS

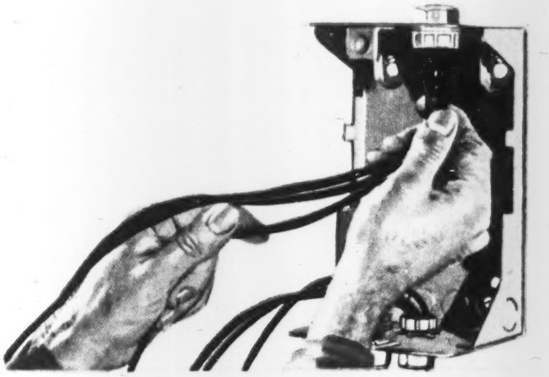
installs easier

works better

lasts longer

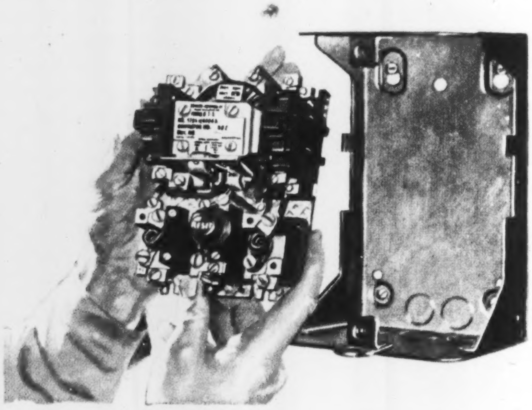
1. Just loosen two screws . . . and off comes wrap-around cover. Screws stay in cover, do not fall into machines or get lost on floor; a typical time-saving design detail.

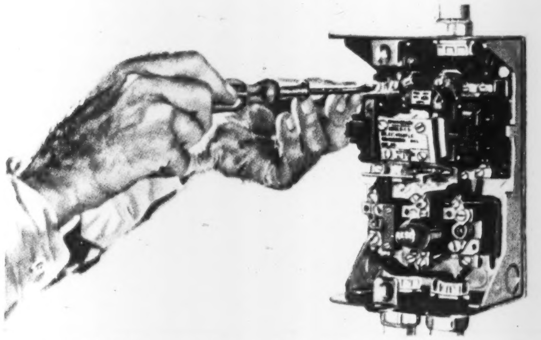




3. Pull in wires . . . Making conduit connections and pulling wires is a cinch. No starter mechanism or side walls of case in the way. No skinned knuckles or damaged starters.

2. Remove entire starter mechanism . . . by merely loosening three screws. Then light, easy-to-handle skeleton case can be installed. Embossed mounts for good job on uneven surfaces. And upper mounting holes are keyhole slotted.





4. Connect up and go . . . Straight-through wiring; all line terminals at top, load terminals at bottom. All terminals are clearly marked and visible from front. Pressure connectors throughout. All panel wiring is color coded.

Factory records everywhere today show the cost of installing motor control is almost always greater than the cost of the equipment, often two to three times as much. That is why Cutler-Hammer engineering made easier installation a key objective in designing the new Cutler-Hammer ☆☆☆ Motor Control. When you buy motor control, figure its *real* cost, its installed cost. Then you too will insist on Cutler-Hammer! Your nearby Cutler-Hammer Authorized Distributor is ready to serve your needs. Order from him today.

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